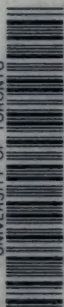




ALCOHOL ITS INFLUENCE ON MIND AND BODY

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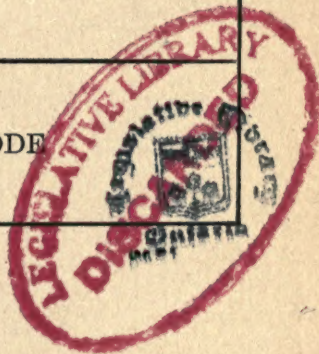
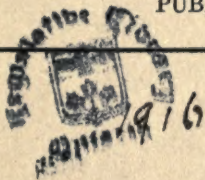
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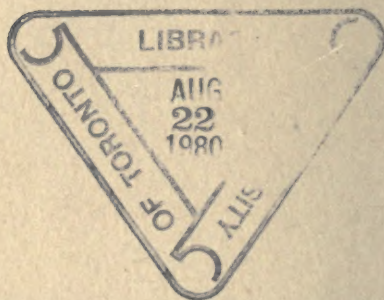
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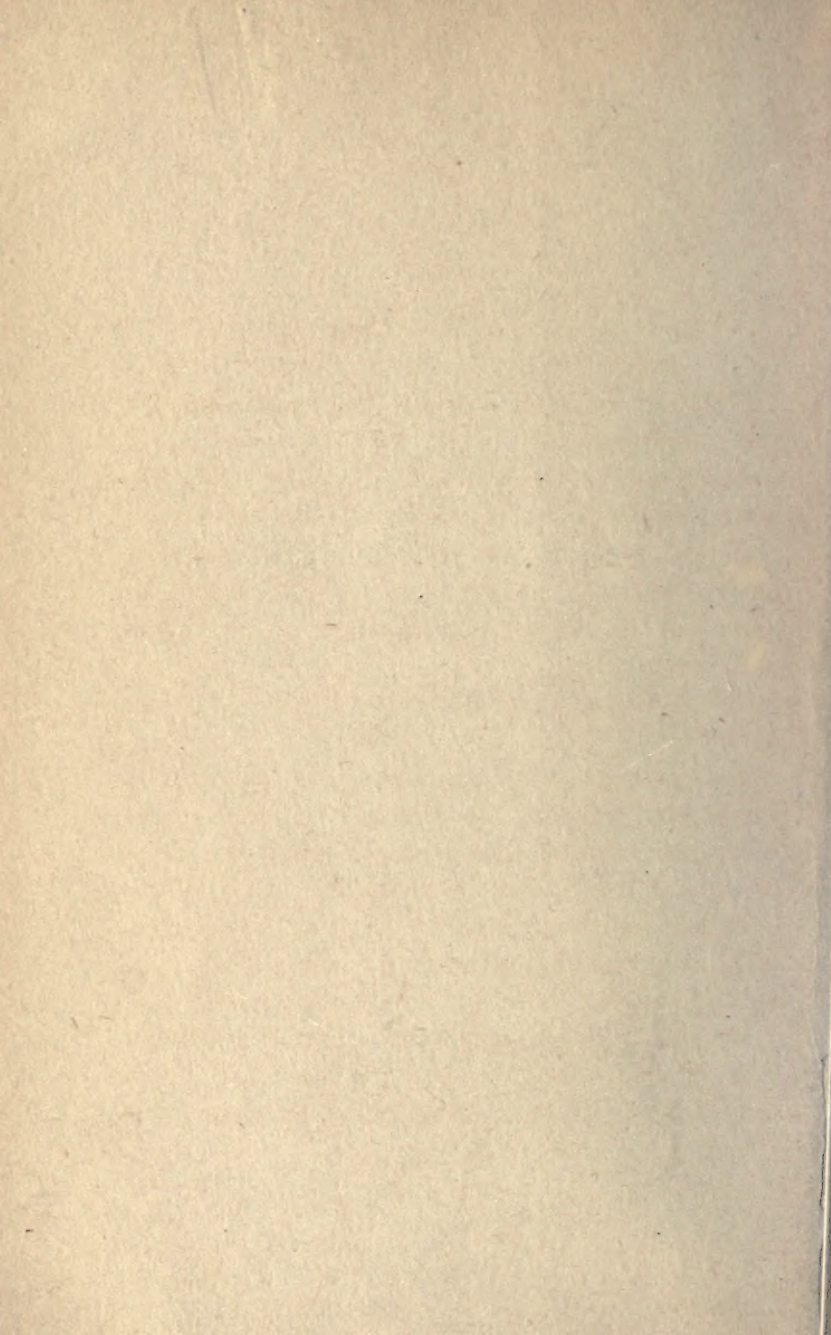
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DEDICATED TO
MY WIFE
WHO HAS CONSISTENTLY INSPIRED AND
ENCOURAGED MY BEST EFFORTS



PREFACE

THE average man drinks for one or more of three reasons.

First, because he knows no better or has been wrongly informed or maliciously misinformed:

Second, because the enemy, his friends, insist on his being a "good fellow," and he hasn't the gumption to realize that good fellowship begins at home: and,

Third, because his alcoholized body cells crave narcotics.

The average man has had little opportunity, except by referring to highly technical foreign works, of knowing that even the smallest amount of alcohol reduces his efficiency in clear thinking, in quickness of eye, ear, and brain; in all those tasks, coördinating muscle and mind, that make up the complex fabric of industrial activities.

He has always believed that alcohol is a stimulant. I shall show, on the evidence of physiologists and psychologists, that it is a depressant;

that a normal, non-alcoholized man drinking for purposes of mental stimulation merely receives his "kick" in the imagination.

Also, that a moderate drinker's mental output, as to quantity and quality, is decreased in measurable degree, as worked out in thousands of experiments with instruments of absolute precision.

We have been told that alcohol is a food. I propose to show that the food-value theory of alcohol has been thoroughly discredited — that even the most frequently quoted of the food theory champions declares it to be a food only as arsenic, belladonna, and other poisons are foods. Also, that not only is the food value of beer almost negligible, but that beer is, if anything, even more besotting and dangerous than liquor.

Many do not know that modern medicine absolutely repudiates the so-called therapeutic value of alcohol. Or that even moderate — let alone excessive — drinking never made a poet more poetic, an engineer or a captain of industry more practical, or a philosopher more philosophical; that none of the genius of inspiration lurks in the lees of the wine cup; and that a sweeter, saner social life can and does follow the banishment of Bacchus, and the installation in his place

of Minerva, Euterpe, and little, chubby-cheeked Eros.

So if this modest effort shall have been the means of inculcating these truths, and convincing even a few good fellows to be better fellows I shall be amply repaid, and highly gratified in the conviction that the world is just a little better and sweeter, and some few wives and little kiddies are happier, because I lived awhile on this earth and wrote a little book about "Alcohol — Its Influence on Mind and Body."

EDWIN F. BOWERS, M.D.

June 1, 1916.



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ALCOHOL

ITS INFLUENCE ON MIND AND BODY

CHAPTER I

THE EMPEROR OF DRUGS

THE average man drinks because he is an average man and a moderate drinker. He knows the difference between a sot and a moderate drinker. He knows that he can stop if he wishes. He has complete faith in his ability to avoid sottism, to walk arm and arm adown the primrose path with Mr. Moderation.

He is probably right in this conviction. He may never, or rarely ever, overstep the bounds of moderate drinking, in which he assumes that there is no harm, and there may be much good.

For is not an occasional drink stimulating? Is alcohol not a food? Do not our German brethren — some of whom own brewery stock — contend that beer is “liquid bread”; that malt

and hop liquors and brews are concentrated nourishment in most concentrated form?

Have not doctors prescribed alcohol since that old day — or perhaps long before — when we were counseled to “take a little wine for our stomach’s sake”? Has alcohol not been issued as an emergency ration to stimulate for murderous carnage by field and flood? Have not the conquering races of the world been tipplers and wine bibbers?

Witness the supineness and cow-like docility of the East Indians, who permit a mere handful of whiskey-drinking, beef-eating Englishmen to dominate and domineer them. Also, observe the Chinese — who are the original human door-mats, guaranteed never to turn, even when trodden upon in rankest injustice — in contrast with the “peppery,” saki-drinking Japs.

Have not the great poets, from Anacreon to Omar Khayyam, and from the Tent Maker to Kipling, extolled the virtues of the ferments of grape and grains?

Did not the commanders of men, from Alexander the Great down to Grant and Von Hindenberg, hew out victories in that noble rage inspired of wine, whiskey, and beer?

Do not the world’s inventive geniuses solve

their most intricate problems; do not the great captains of industry "put over" their biggest deals; and do not the diplomats plan their most bare-faced coups to the accompaniment of popping corks and gurgling liquids rich in that white fire-water that takes the man out of manhood?

Did not the dissolute, wine-smeared Socrates — the profoundest thinker that ever lived — inspire Plato with the ideas — perhaps furnish even the actual thought-stuff, out of which were woven those immortal Dialogues?

If all the gregarious, social life of the race is manifested in highest degree around the drink-splashed festal board; if the shrine of Bacchus is the perennial meeting place of countless millions of devotees, who might otherwise be misanthropic, or mutually suspicious of each other, why, in the name of all the gods at once, isn't it good to encourage this spirit? If cheer and good fellowship can replace gloom and loneliness; if the magic of that wondrous Alchemist transmutes Life's leaden metal into gold, why deny this alcoholic solace to mankind?

Most men who drink believe some or all of these things. The average man accepts them because he doesn't know any better. Hitherto, he has not

been definitely shown the error of his belief that moderate drinking is harmless. Of course, everybody admits the harm in excessive drinking. The moderate drinker always has believed that alcohol is a stimulant.

He has been told that alcohol is a food. He believes the "liquid bread" fable, and, to the best of his ability, obeys the admonitions of the malt lords: "Drink up, the brewery needs the empty kegs."

The average man is prone to explain his indulgence in liquor on the ground of medical benefits. He has been regaled for lo, these many years, by the earnest admonitions of hoary-headed centenarians to take Fluffie's Malt Whiskey or Old Hangover, get rid of all the ills that flesh is heir to or likely to inherit, and live to be a hundred. This, by getting comfortably and scientifically permeated by these panaceas, and remaining thusly. These beliefs of the average drinking man are part of his allegiance to King Alcohol.

Now, if this ruler really possessed these manifold virtues attributed to him, perhaps the annual tax of five billion dollars — fifty dollars a year for every man, woman, and child in the United States — might not be excessive.

But the moderate drinker didn't know what alcohol did to him. In fact, nobody knew much about alcohol until men began to study it scientifically. As human beings these investigators were prejudiced in favor of alcohol; as scientists they did not care what was proven so long as the facts were incontrovertibly established.

Their studies demonstrated conclusively that all preconceived theories and beliefs were wrong. Alcohol has none of the virtues and few of the qualities claimed for it. The Arabs, who gave it its name — *al ghole* — had the right idea. Alcohol is exactly what its name indicates — an “evil spirit.” It is the emperor of all drugs.

CHAPTER II

THE IGNORANCE OF 300 CENTURIES

INASMUCH as human beings have been drinking alcohol for some 300 centuries — its discovery is believed to be coincident with the dawn of the agricultural period — it would be natural to suppose that they would interest themselves in really knowing something about it. But they didn't, in a scientific sense.

The excuse could not be made that the practice of drinking alcohol is either limited or sporadic. There has been plenty of opportunity for observation. The lowest order of savages and the highest order of civilization have been equally devoted subjects of the Great Emperor. And human beings ferment and drink alcohol wherever grains and fruits grow. None have been too low in intelligence to start breweries and distilleries.

There has been no lack of observation or of comment on the effects of alcohol, both pro and con, and, as they say in some sections, the pro

has been mostly "con." But there was a lack of careful and intelligent investigation. Until a few years ago the scientists were almost as ignorant of the really important facts about alcohol as were the savages. The plain truth is that human beings have devoted thirty thousand years to drinking alcohol and only 25 years to finding out what its real nature is, and exactly what it does to the organism.

The effects of excessive drinking always have been plain enough — to the savage as well as to the most highly cultivated. Through the ages men have preached against drunkenness. There have been moral and ethical teachings aplenty. Medical men long have known that heavy drinking engenders gout, a hob-nailed liver, "spleen," laboring heart, brittle arteries, ulcerated stomach, and many other serious conditions.

Yet there seems to be a natural impulse for narcotics or intoxicants. It is not the taste that appeals — at least not in the beginning. Every drinker who is normal, and who is not cursed with an alcohol heredity, is forced to learn to like alcohol.

This impulse towards intoxicants is not confined to human beings. Insects frequently get drunk

by indulgence in over-ripe fruit juices, returning again and again to their Dionysian feast. Wasps and bees often become wildly excited and quarrelsome, finally ending their orgy by crawling away in a semi-somnolent condition to sleep until the effect passes. Hens and chicks eagerly devour bread soaked in whiskey or brandy.

Elephants and dogs frequently acquire fondness for liquors. Some degenerate dogs drink beer and refuse meat when both are offered at the same time. Darwin records the case of a baboon made drunk with beer. The next morning his keeper found him a picture of dejection and woe, holding his head tightly after the fashion of a repentant roysterer. The simian showed more sense than the average drinker, however, for when he was again offered beer he refused point blank to touch it.

While the impulse for intoxicants may be natural, there is not a drop of alcohol in nature. It is not, and never was a "natural" product. Alcohol is formed in nature only as an excretion. It is the garbage of vegetation, the discarded elements of decayed plant life. It is food only for the ferment of vinegar, and poison for everything else.

But there is no doubt that alcohol is the chief factor in satisfying a universal human craving for social excitement. Nothing so effectively breaks down reserve, destroys barriers, takes the brakes off restraint, and promotes what is commonly called a good time. "Sociability" has much to do with moderate drinking, for the habitual drunkard cannot long continue the primrose path in solitary state. His hunger for companionship is quite as great — frequently greater — than his thirst for alcohol. He might be a human island, completely surrounded by bottles and kegs of booze, and yet never take a drink by himself. But let a friend drop in, and immediately he feels an imperative need for spirituous stimulation.

Some years ago Bellevue and allied hospitals in New York asked 246 patients: "Why did you begin drinking?" The reasons assigned were: Sociability, 52.5 %; trouble, 13 %; medical use, 9.3 %; occupation, 7 %; taught by elders, 7 %; out of work, 5 %; unknown, 5 %; "to be thought sporty," 1.2 %.

This was a practical and not a scientific inquiry, but as an every-day guide the figures will hold good for thousands of cases.

What does alcohol do to the moderate drinker?

Until yesterday nobody knew. And even then the highly trained and specialized mind that first took up the scientific study of alcohol had no particular interest in it. He was pursuing a definite course of investigation, in the careful, methodical, patient, German scientific way, and alcohol crossed his path. That meant he had to know all about alcohol. And long before he was ready to give his report to the world Dr. Emil Kraepelin, Professor of Mental Diseases in the University of Munich, probably the most eminent living authority on mental and nervous diseases, had proven startling facts.

For 25 years Dr. Kraepelin had been investigating the psychic effects produced by drugs — with the end of securing knowledge of the incipient symptoms and processes of mental diseases. He was led to undertake studies in alcohol in order to resolve insanity into its simple elements. Also, to note the effects of liquor on heredity, and that disease of the will which conduces to vice and criminality.

In his wonderfully-equipped psychological laboratory, he attempted artificially to produce upon normal individuals simple sets of psychic derangements, that he might study the various phenomena

in their beginning and development, and apply the knowledge so gained toward curing certain phases of mental aberration. He used for this purpose various chemical substances — caffeine, opium and its derivatives, bromin, cocaine, sulphonal, and finally our old friend alcohol — known to its enemies as the Demon Rum. The phenomena produced by alcoholic stimulants were so extremely rich and startling that Kraepelin decided to devote particular attention to this poison.

By the use of instruments of absolute precision, which could not be coerced, wheedled, or brow-beaten into giving unfair decisions, the professor and his pupils, many of whom are among the most eminent scientists in the world, established the fact that alcohol caused degeneration, that uniformly it affects all the faculties. And the higher and more involved the faculty, the more definite and measurable the effects. Also they proved that the physiological and psychological action of alcohol is cumulative; that if it be continually used, even in small doses, harm is increasingly manifested; the powers of coördination are impaired, and the destruction of tissues and protoplasm hastened.

CHAPTER III

WHEN IS A MAN DRUNK?

THERE is wide difference of opinion among authorities as to just when a man is drunk. This also varies considerably with locality. For instance, in Boston a man is intoxicated when he cannot offhand name the ten decisive battles of the world, and define pragmatism in fifteen words. In New York a man is intoxicated when he himself acknowledges it. And in other parts of the country they cheerfully maintain that a man is never drunk until he falls down, can't get up, and has to hang to the ground to keep from rolling off the earth.

But scientists say that a man is under the influence of liquor when the limits of his muscular or mental speed or endurance have suffered diminution as a result of his having imbibed. For one of the first things the scientists found out when they commenced to measure drunkenness and its effects, was that every man who drank any appreciable

measure of alcohol was drunk — in degree, for two or three days afterward. Dr. Kraepelin and his confrères proved conclusively that alcohol is a narcotic, first, last, and always; that the stimulation supposed to be derived from its use is purely an imaginary stimulation; and that one does less and poorer work under its influence, although, curiously enough, he thinks he is turning out more and better work than usual.

With the calm unbias of the true scientist, the alienist, working with precise instruments, set out to measure drunkenness as definitely as one would weigh salt or determine the distance between two points.

And he did just that. Not with individual persons so much as with the individual as an average unit of a mass. In other words, after the method of a life-insurance statistician, who can accurately prognosticate just how many men out of a group may be alive at the expiration of ten years, while he would fail in pointing out the individuals. On this basis Kraepelin secured results which have since been duplicated thousands of times in the great physiological and psychological laboratories of the world.

The professor and his coworkers have also

demonstrated that it is not the fourth or fifth drink that intoxicates: it is the sum of the first, second, and third, and they were also able further to fix the effect of the first with startling accuracy.

And remember, all the subjects of these investigations were men habituated to drinking. In fact, there are hardly any other kind in Europe; in Germany or Bavaria, at any rate. For, the Bavarian, German, Swedish, Danish, and Dutch subjects selected by the dispassionate professors were anything but total abstainers. They are, always have been, and in all probability always will be drinkers, as their fathers and grandfathers before them have been. And in all likelihood their children will follow, unthinking and sheeplike, in their father's alcoholic footsteps.

Now, it would be altogether too much to expect a man who has taken only one or two ordinary familiar drinks to realize that he is drunk — to a definite, measurable, and analyzable degree. He may not know he is drunk, but those little clocks, intricate wheels, and serene mechanical devices of the laboratory will know it. There is no guesswork or hallucination about it. There is no hypnotizing, a writing balance, psychologizing an

ergograph, or bamboozling a memory test. There is, on the contrary, a ruthless uniformity in the results. The decision they render is final. Attempts to disprove them but increase their emphasis and insistency.

A group of men, kept in ignorance of the nature of the tests, who understood only that they were expected to persist to the limit of their endurance, were shown to be capable of a definite average quantity of work. This average was determined with almost mathematical certainty by experiments made dozens of times, under absolutely similar conditions as regarded time of day, food, exercise, and surroundings.

Now, an excellent index of the degree of a man's capability for work is the weight he can continue to lift with the index finger. So the ergograph, a celebrated laboratory device invented by Professor Angelo Mosso, was brought into requisition. In manipulating this testing machine the fingers were clenched around a wooden peg, all but the index finger, and the arm held immovable by being clamped to the arm of a chair. A weight of several kilograms (a kilogram equals 35.2736 ounces), suspended by a small rope that passed over a pulley, was raised and lowered by this index

finger, until the subjects were forced to desist from exhaustion. This process was repeated twelve times, with intervening rests of a minute. Each pull was automatically recorded by a pencil on a strip of paper, registered by a line. The sum of the lengths of all the lines was translated into "meter kilograms," which meant the work accomplished by the index finger in raising one kilogram one meter (39.37 inches) against the pull of gravity.

These experiments were made ten times a day, and the total average for each man calculated for a number of days, under conditions of absolute abstention from drink. Then the men were given a "good glass" of Bordeaux wine, or, to insure uniformity in dosage, its alcoholic equivalent — about one-third of an ounce of alcohol freely diluted in water — after each meal, and the experiments repeated.

The consequences were a diminution in the subjects' ability to withstand the fatigue of weight lifting, amounting to an average of from 7.6% to 8%. These experiments were repeated hundreds of times by scientists in various parts of Europe, and always with similar results. In every instance a definite, measurable loss in muscular efficiency was demonstrated.

Professor L. Schnyder, of Berne, testing this on himself with Kraepelin's ergograph, found that when he took no alcohol he could lift the weight with the middle finger of his right hand an average of 240 times in 12 groups of tests.

However, after taking 28.4 grams of alcohol, the amount contained in about one and one-half pints of beer, or a man's size glass of whiskey, he was able to lift the weight only an average of 191 times.

Similar tests, made in various forms of muscle work, show that there was a loss of 8% to 10% in work values on the days when the workers drank a half pint of wine, the alcoholic content of which would equal that of a pint or a pint and a half of beer. So it would seem that it needs no ghost returned from the tomb to prophesy that a belief in the strengthening and supporting qualities of alcohol will eventually become as obsolete as belief in witchcraft.

Professor Durig, an expert mountain climber, was sure that alcohol stimulates. He determined to prove it in his own case. The experiment he set for himself was to climb to the summit of Mt. Bilkencrat, in the Alps, 8000 feet above sea level. He "packed" the same amount of weight on each

trip, and carried instruments which enabled him to measure exactly how much bodily energy he was expending, the amount of muscle work achieved, and the period of time required.

He obtained an average of all these in several tests made under abstinent conditions. Then, for a similar number of tests, each day, before beginning his climb, he took the alcoholic equivalent of two and one-third glasses of beer. The result, to his complete surprise, was that, although the instruments indicated that he had expended 15% more energy than on abstinent days, his watch indicated that it had required 21.7% longer for him to reach the mountain top than on the days he had abstained. The actual work done, computed in foot pounds, averaged 16.4% less than on alcohol days.

Having shown these effects on resistance to fatigue, learned professors advanced to the consideration of principles involving combined muscular and mental processes. They used the "writing balance," invented by Professor Kraepelin, and constructed by the skillful instrument maker, Runne, at Heidelberg. This ingenious contrivance had attached to it a fifth-second chronometer, which automatically registered time on a rotating

drum covered with carbon paper. On the record obtained in this manner the time required in writing a set of characters can be computed with an error of less than one two-hundredth of a second. The unit of time on which the trials were based was called a "zeta," and corresponded to one one-hundredth of a second.

The daily exercises began at 8 A.M. The subject's scientifically sober hand was connected with the apparatus, and the figures 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 were written twice with pencil at top speed. Then the sequence reversed—10, 9, 8, 7, 6, etc.—was twice written; then the German letters "inm," also twice. These were repeated ten times, and the total average time consumed by each man was measured. Then he received his allotment of wine, as with the ergograph experiments.

After 5 minutes the subjects resumed their writing, with instructions to carry out their appointed task in scribbling as before. They proved that, while the spirit was willing, the flesh, and its controlling nerve pulses, were weakened. Every man of them measurably had slowed up. The degree of retardation, after writing 1 to 10 under the influence of the small amount of alcohol administered (about what the ordinary drinker would

take with his dinner), amounted to 5.6%. In writing 10 to 1 the retardation was greater, amounting to 7%. This was accounted for by the increasing complexity of the stunt; it being a more unusual combination than the straight progression of numbers. With the "inm" the deviation from normal was even more apparent, averaging 7.3%. Again and again these same general results were secured; though new crews were used for each demonstration.

Similar results followed in the coördination tests, where the subject was required to "snap down" a telegraphic switch at the unexpected flash of a light or sound of a gong; the time elapsing between flashing the light or striking the gong and closing the switch being measured by the "zeta" chronometer. In every case the rapidity of the coördinating responses was decreased from 6% to 8.3%. If this happened to a locomotive engineer who, at a flash of a red light around a curve, was required instantly to close a throttle and reverse a lever, it might retard mental and physical response just long enough to cause him to pile his train in the ditch.

For the next experiment a number of accountants of all grades were selected, and their average

ability to add one-figure columns was estimated for one week. They were then given daily, in divided doses, the alcoholic equivalent of a pint of light beer. A marked and progressive diminution in their output was noticed, beginning with 3.1% the first day. After 2 weeks of this steady moderate alcoholic allowance the percentage increased to 15.3. With these facts and figures in mind it should not be difficult to determine the whys and wherefores of the relatively slow and errorful Monday morning's accounting and balancing.

Similar experiments were then tried on typesetters. These were required to set type from printed pages (to insure absolute uniformity of copy), the total number of "ems" a day being computed for a week. Then, with daily gentlemanly drinks — the kind that millions of moderate drinkers take every day because they like it, or because they believe it benefits them — the typesetters lost an average of 9.6% in efficiency by the end of the week. And these particular typesetters differ not the slightest from thousands of other typesetters, printers, typewriters, and linotype operators all over the world.

A similar experiment was made upon four type-

setters in a printing office in Heidelberg, Germany. The trials were carried on for four successive days, an hour a day being devoted to each. On the first and third day no alcohol was given; on the second and fourth days the work was done after the typesetters each had received three-fourths of a tumbler of Greek wine (18 % alcohol).

It was found that alcohol used in this quantity decreased the amount of work done by an average of 9 %. It is further interesting to note that if this same loss held for a whole day's work, a man earning \$15.00 a week, when abstinent, would be capable of earning only \$13.65 per week if he drank so much alcohol as would be contained in the average drinker's daily quart of beer.

In addition to the loss in the total amount of work done on days when alcohol was given, it was also demonstrated that the number of errors was increased.

In the beginning the investigators obviously wrote the simplest and most practical tests. As the experimenters gradually worked up to the more complex mental processes the decrease in efficiency became much more noticeable. This was particularly marked in the memory tests conducted by Professor Kraepelin and one of his pupils, Dr.

Kürtz, which demanded committing to memory for a half-hour every morning as many twelve-place figures as was possible for each subject to remember. The students would curl their legs round the chairs, chew the ends of their pencils, look up at the ceiling, and mumble "one six nine, eight seven three, two one eight, one six two," or some other group of 12 numbers, until they could say them without effort. They would then tackle the next group, committing as many twelve-number sets to memory as was possible in the course of a half-hour, repeating each set in a whisper to a mentor seated beside them. This was carried out for a fortnight, after which their average was computed.

Then the subjects were given, each morning, just about what would be considered a good "eye opener." Immediately they dropped behind in their studies. The next 2 weeks showed an average reduction of 6.2% in the number of twelve-place figures committed to memory.

Kraepelin also supplemented his arithmetical experiments with a series of practical tests upon accountants. A dozen clerks were given a number of sums in compound addition. Each was provided with a stop-watch, which he started the instant he

began working his sums, and stopped when he had finished. The average time required was thus estimated for each man.

A glass of wine was then given, and the work was resumed on an equal number of sums of a like number of figures. Out of the first 12 men tested, 11 were an average of 14% slower. And the twelfth, though slightly faster, had such a large percentage of errors that his record had to be eliminated.

These experiments were repeated again and again, employing different sets of clerks, but invariably the results were the same: the lengthening of the time required to perform the work, and an increase, frequently of disastrous proportions, in the number of errors in the sums.

Not the least interesting feature in all this work was the absolute uniformity in results. The reports in one series were never forwarded until the conclusion of the experiments in another psychological clinic. Then these were compared. Their consistency was startling.

All these demonstrations deal only with moderate indulgence in alcohol, such indulgence as we are accustomed to say is "good for a man," "helps him to do his work," or "stimulates his mental

activity." If the deviation is increased in proportion to the amount administered, it is probable that the cautious professors would have to use a yardstick or a table of logarithms in order to compute the delinquency.

CHAPTER IV

MORE TRUTH ABOUT THE DEMON RUM

AND so we have reinterpreted drunkenness. We have found a new definition for the word "intoxicated." We have a new standard for recognizing inebriety. Not by the flushed face, the lack-luster eye, the staggering gait, the incoherent rambling talk; not by the general aspect of helplessness and stupidity which envelops, like a murky aura, one who has partaken unwisely and unwell of "that perilous stuff that doth weigh upon the heart" — and all the other internal organs — as well as the blood vessels. But by means infinitely more accurate.

For we can now determine to the fraction of a per cent just how drunk a man is, just how far his mental and physical capacities deviate from his normal. We know, by a system of mensuration as accurate as a pair of scales, as unemotional as a peck measure, exactly how intoxicated is one who has had only what he always thought was an

“ordinary” drink, but which, since we are beginning to understand what it does, now proves to be an extraordinary drink — a drink fraught with such potentialities, so subtly and effectually concealed, that its actual effects upon the organism are a source of perennial amazement to the scientists who are devoting the best part of their lives to its study.

The experiments of Dr. Fuerer and Professor Smith indicated that an intoxication too slight to be recognizable decreased the capacity to memorize, to correlate ideas and association to as late as the third day after taking alcohol. This, mind you, in ordinary doses. The subjects were not suffering from blood-shot eyes, horrible katzenjammers, nauseated and rebellious stomachs, irritated alimentary canals, and laboring hearts.

Had they been, we could more readily comprehend why it might take even a week thoroughly “to get over” them. To all outward physical appearances they were absolutely normal. But, just as stars exist, visible to us only with the highest powered telescopes, just as bacterial life exists which is brought into the ken of consciousness only by the microscopic lens; just as there are sounds we cannot hear except with the microphone;

just so definite phenomena of alcohol exist, the degrees of which are not only measurable by trained observation, but whose gross effects, as applied to work output, are plain as a pike staff.

At first, however, the results astonish even the most blasé. Dr. Fuerer frankly declared:

“When I began my experiments I had no suspicion of the results I should come to, and even during their course I was certain that no considerable effects could be attained. When I learned the true state of things I was surprised — and frightened.” This has been the experience of most men first becoming familiar with Barleycorn’s cell-bludgeonings.

In his report Dr. Fuerer emphasizes particularly the enormous waste in work values and economic efficiency as a result of the ordinary or moderate use of alcoholic drink. We shall consider this interesting and important phase of the subject later.

This disconnecting of the memory plugs by that nimble-fingered operator, John Barleycorn, is one of the most serious results of intemperance. Cases are frequently reported in which certain alcohol-soaked individuals would actually forget all they had seen or heard even a few seconds before.

Five minutes after extremely painful surgical operations many of these patients have no recollection of what has taken place, and have not the remotest idea why they are in bed. In fact, it might be observed that they would make ideal witnesses, inasmuch as what they don't know or don't remember would be the extreme limits of sufficiency.

The beginnings of this memory crumbling have been demonstrated experimentally by Dr. R. Vogt, of the University of Christiana. During 7 months alternating experiments in memorizing 25 lines of Homer were made with and without alcohol. The time required for repetition without mistake averaged 18% longer during the alcohol periods than during the abstinent days.

The amount of alcohol given was 25 c.c., corresponding to about a half pint of 4% beer. When the system had accustomed itself to alcohol — in other words, when the abnormal condition became the condition normal to the subject because alcohol toleration was established — the difference in memorizing ability was reduced to between 5% and 7% longer — the alcohol being taken after breakfast.

On the other hand, when the drink was taken

before breakfast — “on an empty stomach” — the lengthening of the required memory period went up to 69%! Which seems to be a pretty strong argument for not beginning the day with a drink.

However, one of the most remarkable features connected with these studies was developed by 38 of these daily memorizations being repeated after 107 and 108 days. This elicited the startling fact that the time required to recall the memorized lines was uniformly and invariably greater in the case of those stanzas learned on alcohol days! In other words, not only does it take a longer time to fix impressions when alcohol is used, but the impression itself, made while the system is entertaining a gentlemanly drink, is not so permanent and durable.

Perhaps the most convincing observations, in connection with the Munich experiments, was concerned in the free “association of ideas.” To illustrate: If the name of an object is spoken, immediately one thinks of something in connection with that object. Professor Kraepelin’s subjects were requested to write these down, enumerating as many associated objects as occurred to them in the space of 5 minutes. Two words were given



out at each session, 5 minutes being allotted to each subject. This was repeated at intervals during the day for 10 days, and the average number of suggested things reckoned up. Then each evening preceding the next 10 days a generous "nightcap" was given, and the results of the following 10 days' "association" computed. A loss in coördinating power in this series amounted to as high as 27 %.

This was a remarkably convincing demonstration, and proves conclusively that one who drinks much is living only a small part of his normal life; for his brain is narcotized — partly paralyzed by the action of liquor.

In testing out the association of ideas, it was established that the most valuable and pertinent association of ideas diminish on the days following the small dose of alcohol — diminish from 11.03 % to as high as 46.08 %.

The experiments embraced 1350 idea associations. The quantity of alcohol corresponded to the alcoholic content of from one-half to one bottle of light wine daily, or 2 to 4 pints of ordinary beer. But if one be an accountant, or engaged in any work requiring accuracy, quick perception, correlation of ideas, or memory of numbers, names, and

facts — it is enough to result in his being able to give his employer only from 89 % to as low as 44 % of his normal, undrugged efficiency.

Shortly before his death, Dr. J. J. Ridge, an English physiologist, made a series of experiments which points conclusions of tremendous importance to railroad men. He selected a group of 10 medical students, nurses, and porters. Placing a row of letters at the end of a corridor, he had each member of the group walk slowly from the other end until the letters could be read, changing, of course, the sequence of the letters in each case. A chalk-mark was drawn upon the floor, to indicate the spot from which the furthest degree of vision in each person's case was possible, and each individual's initial was marked beside it.

He then supplied his subjects with beer in quantities which ranged from half a pint to as small an amount as one-sixteenth of a pint — which not even the most captious critic would claim an excessive quantity.

On repeating the test, it was found that in no single instance could any of the victims read the letters from the spot where they had originally stood. All had to move closer. In none of the group was there any improvement.

Professor Kraepelin, checking up these experiments of Dr. Ridge, found that, on an average, a man who had taken a fluid ounce of alcohol a half-hour afterward had to approach to 20 feet in order to read letters he had previously read at a distance of 30 feet. The effect in diminished vision, he found, lasted for from 4 to 5 hours after drinking.

Another experiment of especial interest to railroad men, concerned the rapidity with which visual images could be perceived, and also the "time reaction" — quickness and accuracy — of the response thereto.

Dr. Kraepelin stationed each member of a group of men in turn a little distance from a screen, from behind which a colored flag was suddenly erected. The raising of the flag started a split-second stop-watch.

They were directed to press a button, which, by means of electricity, stopped the watch, and so recorded the length of time it required to perceive the flag, decide its color, and press the proper button to designate that color.

Each man's average under abstinent conditions was thus estimated. He was then given a glass of light wine. After a short interval, to permit

absorption of the alcohol, the experiments were repeated. The results, after taking alcohol, showed that in every case the men tested were from 6% to 13% slower in responding. Also, errors in determining the proper color of the flags were materially increased.

In another test figures, letters, and words were made to pass quickly before the eyes of a group of subjects, who were asked to write down what they saw. After alcohol had been taken, they failed frequently to perceive all the characters that shot by, and invariably they made more mistakes in enumerating them.

The effect of alcohol on mental quickness in answering signals has been carefully studied. For example, tests were made in which subjects were required to decide which of two motions to make at a given signal, as an engineer, when a red light flashes out on the track before him, must decide in the fraction of a second the action which will guide his train and passengers to safety.

The tests were made thus: If a green flag showed, the individual tested was required to press an electric button at his right; if a red flag, he must press the button at the left. For a short time after taking the small amount of alcohol

contained in a bottle of claret, he pressed the button more quickly, but he was much more likely to press the wrong one. He made more mistakes. Increasing the amount of alcohol slowed up the time of response, and markedly increased the number of errors.

This shows the danger a drinking man may be in any business requiring rapid giving, receiving, and answering of signals, for alcohol slows the correct reading of signals, and invariably increases the liability to make mistakes. It is partly for this reason that so many American railroads require abstinence on the part of all train operatives.

These studies prove that alcohol is depressant, anaesthetic, and narcotic. Its effects on the sensory and motor nerves are to diminish acuteness and pervert activity. Sending the blood to the head and surging through the brain with increased velocity is not increased vigor, but increased irritation, which comes just before anaesthesia and diminution of power. In other words, the drinker deludes himself. He only thinks he is thinking; for his very first drink has produced a definite, measurable degree of intoxication.

Dr. Johnson may have been right when he said

that "wine makes a man pleased with himself, which is no small matter." But the man doesn't "please" the stoical ergograph, the smug "writing balance," the sturdy tables of figures, and the memory and association processes.

Indeed, it seems quite clear that if a man has any brains worth preserving, alcohol is the poorest preservative he could possibly pick out to use.

CHAPTER V

ALCOHOL AND CHILDREN

THERE is no question of the earnestness, honesty, and sincerity of Professor Karl Pearson, of the Galton Laboratory of Eugenics, University of London. Professor Pearson collated reports on the height and weight, health, intelligence, eyesight, and death rate among school children in various cities of Great Britain, and, to his own satisfaction at least, proved that the children of drinking parents were taller and heavier, had better general health, more intelligence, keener eyesight, and a lower death rate than the children of non-drinking parents.

And yet, against this we have the evidence of hundreds of equally qualified observers, who insist that it is a crime to give children wine or beer, and that the dreadful neurasthenia of modern times is due chiefly to this early use of alcohol.

Science now contends that many an alcohol-cursed career had its foundation in the nursing

stage, for the tender babe, at the most impressionable period of its life, imbibes alcohol from its mother's breast. It has been proved, again and again, that alcohol is present in the milk when the mother has taken spirituous beverages in excess.

The appetite for liquor implanted by the mother — who perhaps, even under a doctor's direction, is taking ale or porter to "strengthen" her and increase her supply of milk — tends ultimately to make her child an inebriate — if he grows to man's estate.

Breast-fed infants, nursed by mothers who use alcohol oftener have convulsions, are more restless and irritable than infants of non-drinking mothers — all of which symptoms clear up when the mother is induced to substitute pure milk for her alcoholic potion. Indeed, Count Deust, the Austrian diplomatist, when an infant, lay senseless for 24 hours as a result of alcoholized milk from a wet-nurse. She had been celebrating his birth in wine presented her by his father.

And not only is the milk of the mother who drinks drugged with alcohol, but it has been found that it does not contain the proper amounts of protein, fat, sugar, etc., and therefore it is not

so well adapted for building a healthy infant body.

Professor Hahnel says: "Among Bavarians, the greatest beer-drinking people in the world, 300 out of every 1000 babies born are born dead. Each year 69,000 infants die before they are 12 months old. Norwegian mothers had as many dead born babies as Bavarian mothers until they were taught not to drink alcoholic liquors. Now they lose but 80 or 90 out of 1000 babies."

Professor Taav Laitinen, of the University of Helsingfors, reports a comparison of children in 50 abstaining and 59 drinking families in one village in Finland. In the abstaining families, the weakly children constituted 1.3 %, while in the drinking families they constituted 8.2 %. Of the children in abstaining families, 18.5 % died while still children, while in the drinking families 24.8 % died.

Professor Alfred Gordon, of Philadelphia, in a study of 117 alcoholic families, reported that in 90 of these there were at least 200 children, all of whom evidenced degeneracy. One hundred and fifty, or 75 % of the whole number, were epileptic. Of 78 children found in 20 families, whose grandparents, as well as whose parents were alcoholists, 35 were imbeciles and 25 insane.

Professor Bunge, the foremost living authority on the chemistry of nutrition, has shown, by most carefully sifted statistics, that the inability of many mothers to nurse their children is one of the hereditary results of alcoholism, and that the germ cell of alcoholic parents is defective, and cannot evolve a normal body. This, he insists, is the reason we find so large a percentage of functional and organic diseases among children of drinking parents. Indeed, the best informed diagnosticians of Europe and America are firmly convinced that rickets, decay of the teeth, scrofulous glands, and other evidences of physical degeneracy are due in large measure to the use of alcohol, either by the child himself, or by his parents before his birth.

The great Auguste Voisin, head of the Salpêtrière, Paris, and famous the world over as an alienist, proved conclusively that these children furnish a high percentage of our half-witted, criminal, immoral, and insane population, and also that many progeny of drinking fathers — and more particularly of drinking mothers — are struck, about the period of adolescence, with a sudden abatement of their mental faculties. They seem normal enough until, at about 12 or 14 years of age, they are suddenly taken, without apparent

reason, with a mental inertia or apathy, and an insensibility or indifference to morality. Many of them become mentally defective, which condition remains permanent.

And Dr. Samuel G. Howe found, from a study of the family history of 300 Massachusetts idiots, that 145 were definitely known to be the children of habitual drunkards.

Indeed, I myself am convinced that our morons — grown women, whom the Binet psychological tests prove to have only the mental capacity of 12 or 13 year old girls, and from whose ranks prostitutes are largely recruited — are thus cursed because of an alcoholized parentage. This also applies to our gunmen and gangsters, who show similar traits of mental decadence and moron incapacity.

One of the ablest of all investigators in alcoholic phenomena is Professor Demme of the University of Berne. While physician to the Jener Hospital for children at Berne, Dr. Demme studied carefully the effects of alcoholism upon his charges. He submitted to the Christiana Congress a series of tests made upon boys between the ages of 10 and 15, in alternate periods of wine drinking and abstinence.

In May, June, July, November, and December a half glass of red wine was given daily (but a third of a glass to the younger boys). During February, March, April, August, September, and October nothing but water was permitted to be drunk.

The subjects were all from wine-drinking families, and were accustomed, almost from infancy, to the use of alcohol. However, it was found that in the wine-drinking periods the nervous systems of these boys were less stable, and they were more excitable. They slept badly, were given to distressing dreams, and were more difficult to arouse in the mornings. They were sluggish and indolent, and had much more difficulty in fixing attention. Finally the boys themselves recognized their superior comfort and well-being during the abstinent periods, and begged that they be excused from further tests.

In his very interesting report Dr. Demme also refers to a 10 year old boy who suffered from what is known as Korsakow psychosis, an alcohol sickness, the most striking symptom of which is the almost complete obliteration of memory. We have rather facetiously set the high water mark on mental obfuscation when we allege of an individual that "he can't even remember his own name."

But this pitiable condition was literal with Dr. Demme's subject. The little patient was absolutely unable to recall his own name, let alone any one else's name, which he would from time to time voluntarily attempt to remember. His father, it developed on examination, had been in the habit of giving him a "strengthening" dose of a quarter of a bottle of Malaga wine daily.

When this stupid abuse of innocent childhood was stopped complete memory returned. Luckily the boy had not been "strengthened" for a sufficient period permanently to become weakened.

The effect of alcohol upon the mind and memory of the child is equally startling. The abstinent teachers of Holland published recently a series of comparative studies, showing convincingly that the mental activity of beer-drinking children varied in inverse ratio to their alcohol habits. The chart of these findings is a typical picture of a stairway to stupidity. And bearing out these findings, an American teacher, speaking a few years ago at the Bremen Anti-Alcoholic Congress, contended that the dullest children in St. Louis came from just those localities most thickly studded with breweries.

In that classical series of studies by E. Bayer, a school director in Vienna, it developed that the

backward and unruly children were, almost without exception, given alcoholic drinks of various kinds. Many were accustomed to the daily use of rum in their tea.

Professor Bayer studied 588 of these children, distributed through 14 classes. He found that the 134 abstaining children had a total of 42% of the highest marks, both for efficiency and for good conduct, and with the other scholars both deficiency and unruliness increased proportionately with the amount of drink consumed. In other words, the more frequently the children used wine or beer, the more the good marks in scholarship and behavior fell off, and the greater the increase in poor marks.

Bayer's report was corroborated by Dr. Shiavi, who investigated the influence of alcohol upon 4000 school children in Brescia, Italy.

Dr. T. A. MacNichol conducted a similar investigation on 55,000 school children for the New York Academy of Medicine. He found that more than 50% of these youngsters were unable to do work in school that could be marked "good." Studying the habits of 20,147 parents, Dr. MacNichol found that 53 out of every 100 children of drinking parents were mentally dull, while fewer

than 10% of children of abstinent parents were deficient in their studies. So it seems to be proved that alcohol and scholarship mix very poorly, if at all.

Indeed, it would seem that one of the surest and quickest ways of increasing health and efficiency among children would be to teach them simply but scientifically just what alcohol is and does.

Terse and epigrammatic posters should be conspicuously displayed in all school rooms, and in places frequented by children. These should give exact facts concerning just what we are discussing in these pages — the loss in school-room efficiency; the deteriorating effects of alcohol upon health and strength; the debasing and degenerating results of alcoholic excesses.

In Germany a beginning has been made in the "New Education." There the school children learn, as a lesson in composition, that "Alcohol is a poison, with whatsoever name it is baptized — with whatever adjectives it is decorated. However taken, in winter in little glasses to warm one, or in large glasses in summer to refresh one, it is always a poison, as morphine, nicotine, cocaine, and opium. It neither warms nor nourishes. It does not strengthen. It kills. It assassinates."

CHAPTER VI

"BOOZE" AS FOOD

ALCOHOL is a poison which can be considered a food, provided one carefully avoids using it. Its apologists, however, have long contended that it is a true food, and they have quoted, as their authoritative advocate in this view, the late Professor Atwater. They have lifted certain of his statements out of their context, and have wilfully destroyed their meaning and intent.

But they have studiously avoided all reference to Dr. Atwater's speech at the Musée Social in Paris, where he said:

"Alcohol is a food, within very restricted limits. Likewise arsenic, belladonna, and other poisons contain nutritive elements, and can, equally with alcohol, be called foods." Which is not quite so favorable to the "food-value" theory as we have been accustomed to hearing from Professor Atwater's misquoters.

It used to be contended that food served as fuel, after the manner of fire under a boiler, supplying energy by its burning or oxidation. On this basis food values were reckoned in calories, or heat units. It was held that since alcohol in burning yielded a definite number of these, that it must therefore — notwithstanding its notoriously poisonous qualities — be a food.

No longer is this theory tenable, for it has been proven that many substances which burn to water and carbon dioxide in the body, as does alcohol, have absolutely no food value whatever, and are not capable of acting as substitutes for such foods, for instance, as fat or sugar. These substances are glycerin, butyric, acetic, uric, lactic, and other organic acids. All attempts to prove the possession of food value by these have completely failed. This little-known fact has been overlooked, or ignored, by those interested in promoting the theory of the food value of alcohol.

To develop nutritive characteristics substances to be classed as foods must possess other qualities in addition to that of oxidizing in the tissues. These characteristics require that food elements must participate in the building up of the body cells — the foundation of life function.

For instance, such elements as whole series of inorganic compounds or mineral salts — potash, lime, sodium, etc. — have not the slightest calorie or burning value, yet, as true food elements, they are absolutely indispensable to life and health.

Alcohol, by reversing the building principle, and always breaking down the cells, acts destructively upon protoplasm. In short, it is a poison which is the direct opposite of a food.

Further, alcohol oxidized in the body withdraws oxygen from the tissues, and hinders the combustion of food supplies in the organism, particularly of fats. Because of this, unutilized pathological fat is deposited in various parts of the body, and permeates the vulnerable internal organs.

Furthermore alcohol passes out of the walls of cells as easily, or more easily, than it passes into them. This is not the case with any element that could be classed as a true food. Alcohol therefore physiologically violates all pure food laws.

Also, alcohol has exactly the same effect as ether, chloroform, and chloral-hydrate — in contradistinction to sugar, for instance — for it dissolves and is soluble in fats. It is a true narcotic poison in the fat series, and has the same properties as its bloodthirsty cousins of this category. For

with it one can first narcotize, then paralyze, and eventually kill, when given in sufficient quantity, any man, animal, or plant subjected to its action.

Not even the most enthusiastic alcohol exponent would think of calling ether, chloroform, or chloralhydrate a "food," even though these substances oxidize in the body as freely, or more freely, than does alcohol. Of alcohol alone they make a shining exception, for it is only with respect to this White Water of Death that they make the paradoxical claim that, notwithstanding the fact that it is a poison, it is also a good food.

Many men, in other respects intelligent, firmly believe that wine, for example, gives strong bones to growing children, and even staid, bespectacled professors still regard beer as "liquid bread." Yet Destree and Schmiedeberg have demonstrated, in an elaborate and carefully worked out series of experiments, that workmen can do more work fasting than while existing upon alcoholic "nutrition" exclusively.

Also, it has been shown that dogs nourished with a definite quantity of albumen and sugar, can not only accomplish a definite, mathematically registered quantity of work each day — using the

running machine as a testing medium — but they gain in weight. Whereas, if the sugar be replaced with alcohol to the same number of calorie units, there is a distinct diminution, both in the dog's weight and in the amount of work accomplished.

Indeed, if the “oxidizing” view were true, fusel oil — regarded universally as an adulterant to “good” liquor — would, as producing more heat units during combustion in the body, have to be considered a much more desirable food than the fine, high-priced ethyl-alcohols of the much-vaunted “pure” liquors and wines.

But even granted, for the sake of argument, that alcohol has a fuel value, it is a deceitful one, for the body temperature falls when alcohol is used in winter. The surface blood vessels, dilating as they do under its action, are like open windows, letting the heat escape. Polar explorers have long since proven this by sad experience, and it is now but rarely that brandy is included in the explorer's medicine chest. And this same interdiction applies to most of the European armies and their rations.

Also, intelligent drivers and chauffeurs, whose duties require them to be much in the frigid air, realize that there is no quicker way for them to “freeze stiff” than by taking alcoholic stimulants



to "heat them up." Needless to say, dilatation of the capillaries produces a heatening effect in summer, as the blood-congested and sweat-streaked faces of those who indulge in this "food" can testify.

Dr. Lyman Fisher, Director of the New York Hygiene and Life Extension Institute, comments upon alcohol to this effect: "What about alcohol? This lecture is about foods, not about narcotics; so we will place alcohol where it belongs — on the drug shelf. You can get the equivalent of its vaunted energy and so-called food value without any of its poison value out of a little sugar and water."

Gradually but surely driven from their "food" defenses, alcohol's apologists have now constructed a bulwark of beer. Many of these gallant heroes contend that there is more nourishment in a glass of beer than there is in a whale on toast. This may be true. For no one knows exactly how much nourishment there is in a whale. But we know exactly how much nutriment a glass of beer contains. It contains about 5% of malt extract — or 1 part in 20 — the food value of which is variable.

This extract consists of protein matters, converted and unconverted sugar, hop resin, and other substances of no dietary value, left as a residue

after complete evaporation. In addition, beer sometimes contains preservatives, such as sodium fluoride and salicylic acid, together with soda bicarbonate to neutralize the acidity, and to help put the foaming “head” on it. Also salt, to overcome the disagreeable taste — and perhaps inspire a languishing thirst for more of this “liquid food.”

Dr. Wiley, some time ago, very effectually disposed of the status of salicylic acid and preservatives, and even the most enthusiastic exponents of “food in beer” will hardly urge the use of hop resin as an article of diet.

As regards the recent claims that lecithin, or “nerve fat,” has been discovered in beer, this is interesting — if true. If it has — despite all the painstaking negative analyses of many generations of chemists — it is quite safe to estimate that the total amount contained in 4 car loads of beer might approximate the quantity concealed about the person of one vigorous, fresh egg. Which would give it a nutritional value almost as high as that of the hole in a doughnut.

This leaves us a few grains of proteid and a small amount of sugar as the “food” in beer. If the tissues are supplied with a liberal amount of water — although no one claims water as a food

per se — life can be sustained for a very considerable time. Dr. Tanner fasted for 40 days. Perhaps some beer-encouraged expert might do even better. He might — if he could rid the beer of its 4 or 5 % alcohol content — a content that, in the absence of other food to attack, would prey upon the tissues like a myriad of infinitesimal teeth. But if he did, the genial draught would no longer be beer.

Many years ago, Baron Justus von Liebig, in his "Chemische Briefe," said: "It is now possible to demonstrate with mathematical certainty that, so far as enriching the blood is concerned, the flour that will lie on the point of a knife affords more nourishment than 4 measures of the best Bavarian beer. Anybody who drinks a measure of beer daily would thus imbibe in one year about as much nourishment as is contained in a pound of bread." So notwithstanding that Professor Adolph Cluss, of the Royal College of Vienna, states that

"Beer makes good the waste in human tissue, due to excessive mental or physical activity," it does not make it good — chiefly because it contains nothing to make it good with.

In the absence of more convincing proof, it would seem that those who class beer among the foods

are giving their imaginations gentle exercise — or else they are magnifying the food value of a few grains of proteid and a little sugar through the lens in the bottom of a beer bottle.

We are also laboring under a grave misapprehension when we believe that alcohol “assists digestion.” So far as the seductive and cheery looking “appetizer” is concerned, it has almost the same profound influence upon digestion that a tom-tom has upon chilblains. They “tried this out” at Yale University lately.

To one group of students an excellent dinner was given — without alcoholic accompaniment. A few hours later, what remained of this dinner was withdrawn and tested. In every case digestion was found to be well advanced.

Another group of students partook of a similar collation, but each of these, in addition, was presented with an appetizer in the shape of a cocktail, gin-fizz, or whatever they most yearned for.

The stomach contents of this group were withdrawn after the same length of time. On examination it was found that digestion was abnormal and imperfect. Peptic digestion was only incompletely “carried forward,” for, owing to the presence of

alcohol, the digestive juices had failed properly to act upon the albumens.

These experiments were repeated many times, and invariably with similar results. Which proves that the "aperitive" is not an appetizer or digestive. It is a devitalizer, pure and simple, and destroys or retards the normal processes of digestion.

The feeling of warmth and exhilaration, frequently felt as the "kick" from a cocktail, arises merely as a result of irritating the more or less delicate mucous membrane lining of the stomach.

According to Drs. Chittenden and Mendel, "One tablespoonful of whiskey reduces the digestive activity more than 75%." And, asserts Dr. Bunge, "When alcohol is taken into the system, in any appreciable amount, the digestive process is arrested and fermentation ensues."

If there exists a decided misconception as to why whiskey is, there exists an even more pronounced ignorance concerning what whiskey is. Most whiskey drinkers "let the label tell." But what it tells only adds to their plentiful lack of knowledge on the subject.

For instance: Whiskey, brandy, gin, Cognac, rum, and most other high-content alcoholic drinks are all — according to the testimony elicited during

the hearing of the “Whiskey Trust” before the House of Representatives — made from the same base.

This base consists of “high wines,” the first product of the distillation of grain. When these are taken reverently from the distilling apparatus they are raw, crude — totally undrinkable. But on being kept for a time in charred oak barrels, the more poisonous elements — the so-called “higher alcohols,” fusel oil, aldehyde, etc., amounting to approximately 2% — are chemically changed. Although the modified liquor is not less poisonous than it was before, it becomes drinkable. And then it is “whiskey” — old style.

During the aging process the high wines dissolve some of the sugary elements and color from the char of the barrel, and thereby acquire the amber color and the oily “bead” so beloved of the connoisseur.

But this method is generally obsolete. The modern method of producing liquors consists in redistilling these high wines, driving off the fusel oil and aldehydes, and reducing the resultant “cologne spirits” to “proof” by adding a judicious admixture of water and flavoring.

This process is confidingly and affectionately

known as "rectification," and those who unselfishly and unstintingly give of their time and labors in this good work are known as "rectifiers."

Rectification is accomplished by means of essences, aromatics, coloring material, sweetening, spirits, and brains.

Thus a diligent, skillful rectifier, by the aid of sugar syrup, "Bourbon extract," "rye extract," "rye oil," "malt essence," "Irish" or "Scotch" essence, "Pittsburgh rye," or "Monongahela" essence, can produce whiskey of any age or origin — without an effort.

James R. Mann, a member of Congress from Illinois, demonstrated this before the House of Representatives during the classic Whiskey Trust hearing aforementioned. He showed that, by the aid of these various essences, aided and abetted by a bottle of "bead oil," some "aging oil," and caramel to color, any desired variety of whiskey could be produced. And the sworn testimony of a number of distillers, who testified before that Committee — substantiated by the reports of the Bureau of Chemistry — shows that whiskeys were so produced.

Indeed, Mr. William T. Hobart, answering the question:

“How do you flavor gin?” answered:

“We simply take spirits, and put in about 40 drops of essence of gin, which is made from the juniper berry. That makes it gin.”

“You take these spirits, and put in some other essence, and it becomes Jamaica rum?”

“Yes, the spirits will take any flavor.”

“Then you take some other of these essences and some spirits, and it sells for rye whiskey?”

“Yes.”

“Any kind of whiskey you want?”

“Yes, it can be made with these flavors.”

And in replying as to the extent of these practices, he admitted that

“There is not a house in the trade that does not understand this.”

So, upon the Pelion of the natural injuriousness of alcohol is piled the Ossa of highly poisonous adulteration. Is it to be wondered at the drinker sometimes has grave doubts as to where he was struck — and also what struck him?

However, if one must drink, it would be highly advisable — from the standpoint of health — to drink always poor liquor instead of pure liquor. For the best is infinitely worse than the worst. Good old liquor is vastly more harmful than bad

new liquor. The more stars there are on the label of a bottle of high-priced brandy, the more stars the drinker of the brandy will see, and the sooner he will see them. Also, the more permanent the effects of such distorted vision upon him.

This has been proved beyond any question of doubt by most elaborate and painstaking analyses made recently in Europe. Professor Lieberman, of the University of Budapest, was the first to direct attention to this seemingly paradoxical discrepancy.

He examined several hundred specimens of fine wines and brandies, compared his findings with the analyses of an equal number of the ordinary vintages and cheap alcohols of trade, and found the former much more dangerous in that they contain higher percentages of aldehydes and furfural, and also a higher alcohol content than the cheaper beverages.

The best Cognac that could be purchased was found to contain 4.7 % of fusel, as against 7.01 % in some of the cheaper varieties. The Swiss Monopoly, examining 316 specimens of ordinary trade spirits, found a fusel content of only 3.86 %.

Then Professor Morin carried the analysis a step further. A kilogram of the most expensive Cognac fusel was compared with the same amount of fusel

from potato and grain spirits. The result was fetish-destroying. For, while in the grain spirits he found .21 grams of furfural and oils, and in the potato spirits only .05, in the high grade, multiple-starred varieties of Cognac there were 8.88 grams of these epilepsy-producing poisons.

Professor Bruylant of the University of Brussels, and Professor Depaire of the University of Louvain, analyzed 500 samples of spirits purchased at random from the public drink shops of Belgium.

They demonstrated that these contained only one-tenth the impurities found in high grade liquors and wines from the cellars of the epicures.

Similar results were obtained in quantitative chemical analyses made in France and in Germany. And as most of our “high grade” liquors are imported, it would be ridiculous to suppose that the same thing is not true in America.

Therefore, if one must drink, it would be highly advisable to economize in both health and money by drinking only the poorest “pure liquors,” or better still, the “split” of the Maine and Canadian woodsmen. For those who may wish to refine their taste in beverages, we might say that this is a combination of grain alcohol, sugar, and water; mixed to suit the individual requirement and

capacity. The advantage of this alcoholic drink over all others, is that when one is poisoned by it, he at least has the satisfaction of knowing what caused it. One thing, however, we do know. We are quite certain that alcohol, because it destroys all organic life, is a splendid medium in which to preserve a man, after he is dead. But to use it during life — either as a food or drink — is incompatible with scientific thought, or even good common sense.

CHAPTER VII

BEER THE BRUTALIZER

CONTRARY to generally accepted belief beer is proportionately much more noxious than are wines or liquors. While liquor makes a man brutal and dulls his judgment, beer makes him slow-witted and abolishes judgment. And, while wine or brandy, in sufficient quantity, makes a man crazy, beer, in corresponding quantity, makes him stupid. And between insanity and stupidity there is merely a question of choice. Some of us prefer an interesting maniac to a brutalized idiot.

The actual reason for this brutalization and sottishness has been known for only a few years — is even yet not generally understood. Yet it is very simple. For, in addition to the small whiskey glass of alcohol in each pint of beer, beer also contains a large and varying percentage of lupulin — the active principle of hops.

The so-called lupulin glands of the hops secrete an ethereal oil consisting of various terpenes —

substances similar to turpentine oil — which hold the other elements in solution. Among these elements are the hop acids and resins.

We used to think that we got all the “rosin” with which we varnished our kidney cells from the pitch lining of the beer barrels. But we know now that we get our kidney shellac from the hops which enter into the composition of the beer. These terpenes act powerfully and disastrously upon the nervous system as well as upon the kidneys.

The alkaloids, too, have a stupifying action on the nerves. For the hop belongs to the hemp group, and is closely related to Indian hemp. On the female blossoms of Indian hemp, as on the female blossoms of hops, we find glands holding a narcotic, sticky, bitter-tasting substance, which is the active element of hashish.

Hashish is used largely by the various Moham-medan peoples of West and South Africa, and in the Malay Archipelago, for narcotic purposes. In the intermediary stage — before complete stupi-fication sets in — these hemp habitués become dangerously violent — even to running amuck with a huge creese, or crooked-bladed dagger — stab-bing and slashing, until they are mercifully killed in their tracks.

Now, hashish contains exactly the same elements as are found in the lupulin glands of hops — bitter-tasting resins, an ethereal oil, and one or more alkaloids. Therefore, hops exert the same effect on the human body as does hashish — differing only in degree.

Naturally, in making this comparison, we must remember that hashish is used in concentrated form, while there is relatively but a small amount of the hemp elements in beer. But this is somewhat offset by the fact that a beer drinker imbibes — in his favorite beverage — sufficient lupulin to make up considerable of the deficiency.

Professor Reinitzer, of the Polytechnic at Graz, has demonstrated that it is due to the preservative action of the hop resins that it is possible to “keep” beer. The bacterial life-forms in beer (the sarcina organisms) are hindered from multiplying by the resins contained in the hops. This assists the alcohol in preventing undue fermentation. So the internal organs of a beer drinker undergo a double process of pickling, which makes him just about 50% worse off than he would be if he confined himself exclusively to alcohol.

Here we have rational and scientific explanations as to why excessive beer drinking is accompanied

by that stupidity and clumsy heaviness of mind peculiar to those who indulge unwisely and unwell in the beverage that anathematized Gambrinus. That vivacity and brilliance of wit which enable the Munich beer drinker, for instance, to stare stupidly into his beer mug for an hour at a time, are typical symptoms of hemp poisoning — plus alcoholism. And either alone is bad enough — in all conscience.

It would be most interesting if Kraepelin, Benedict, Ascheffenburg, or some other physiologist were to make a series of experiments with the lupulin extracted from a given quantity of beer, to determine exactly how much extra loss in memory, correlation, response, accuracy, and work-value follows the use of beer — as compared with undoped alcohol.

We have just seen that alcohol plus lupulin equals brutishness. It might be instructive to amplify this knowledge somewhat — to convince ourselves that the whiskey devil cannot be driven out by the beer Beelzebub. Here are a few of the reasons why.

Professor Forel, of the University of Zurich, reported that at the Ellikon Sanatorium — the first great institution in Europe to forswear alcohol

in therapeutics — the number of beer alcoholists outnumbered the spirit alcoholists nine to one.

Dr. Hueppe and Professor Przibram, of Prague, have demonstrated, by the incontrovertible evidence of the autopsy table, that beer injures more hearts, livers, and kidneys than does brandy.

The great physiologist, Welminsky, has shown that the belief that beer drinkers do not suffer from delirium tremens is a fleeting fitful fancy. He has given us accurate statistics proving that in Bohemia and other European countries — with a beery past, present, and perhaps future — a far greater number of the delirious have become so through beer than through spirits drinking.

And Dr. Delbrueck adds, for our edification, that beer and wine lands are the most alcohol drenched (France, Germany, Belgium, and Bavaria), and that the whiskey and brandy lands (Sweden and Norway) the least so. He concludes that the beer danger is for the future far greater than the spirits danger.

Also, Dr. August Smith, of Schloss Marbach, has reported experiments which prove positively that beer drinking — even more than spirit drinking — produces invariably a dilation of the heart, and coincidentally causes all the pathological effects

upon the circulatory system that accompany heart dilation.

And here is something that may give the beer drinker pause. In the Reinitzer prisms, displayed conspicuously in the anti-alcohol exhibitions of Europe, one cube represents a pint of pure alcohol — sufficient to kill a man on the spot. Alongside of this is a prism standing for 14.6 pints of alcohol — the amount a man who drinks a pint of beer daily takes into his system each year. It is a relatively simple problem to estimate from these comparisons just to what extent and how fatuously a beer drinker — in pursuing his favorite avocation — is flirting with the undertaker.

A device much used in Europe for demonstrating the alcoholic content of beer, might with profit be employed in this country. This consists of an ordinary and most familiar looking bottle of brown beer, through the cork of which a small hole has been punched. This bottle is set over a heating apparatus, and after two minutes the alcohol evaporates and passes up through the hole. The gas is then ignited, and, needless to say, it makes a very pretty and most illuminating illumination.

And to prove, out of their own mouths, that the Germans are not nearly so enthusiastic about beer

as some pro-beerists would have us believe, we have but to glance at these excerpts from an Army pamphlet entitled "Alcohol and the Power of Resistance," circulated widely among German soldiers.

"There is no justification for calling beer 'liquid bread'; a glass of heavy beer costing 25 pfennigs has no more nourishment than a piece of cheese costing one pfennig. . . . Almost all excesses and disturbances in the army are traced to drink. . . . It is mostly beer that causes the mischief. Beer is not the harmless drink it is supposed to be."

The most sinister thing about beer is this apparent harmlessness. Yet almost invariably the drink habit is inaugurated through the use of beer. Scientific men and sociologists in general fail to agree with brewers in their contention that beer drives out stronger liquors. Professor Strumpel of Breslau, Germany, says: "Nothing is more erroneous than to think of diminishing the destructive effects of alcoholism by substituting beer for other alcoholic drinks." And Dr. Howard A. Kelley, of Johns Hopkins University, says: "I consider, with eminent German authorities of enormous experiences, that beer is exceedingly injurious and dangerous as a beverage." And so it is. For of

18 cases of drunkenness appearing before a police court judge "hand running" recently, fifteen said that they had been drinking beer. Three old toppers had been using whiskey. Half of these beer cases involved assault and battery or destruction of property.

Even as a "hot weather drink" beer is a broken reed upon which to lean. For Dr. Alfred Plehn — world famous as a tropical hygienist — warns explicitly against its use, arguing that, in his experience, it is especially suited, under the pathological conditions which a hot climate creates, to create disturbances in the stomach and digestion, and in this way to prepare the ground for dysentery.

What we have said concerning beer applies with equal, if not greater, force to ale — even to those heavily advertised and much-lauded ales for which the claim is made that

"To feel well and be well, drink a glass of — Ale with your dinner each night. . . . Physicians generally recommend it for its wonderful tonic value."

This statement is pure buncombe. Educated, well-read physicians do not "generally recommend ale for its wonderful tonic value," for the simple

reason that it has none. The man who drinks ale or beer or stout drinks it because he likes its narcotic and stupifying effects. If he thinks he gets any other effects from it, he is deluding himself.

And when these purveyors of poison insist that "No other beverage can compare with good ale for satisfying and nourishing properties," they are paying out good money to prove that they know nothing about nutrition or nutritive values. To prove this statement we have but to refer them to comparative tables showing the food values of milk or chocolate, for instance — both fairly well-known beverages — as contrasted with beer, ale, or stout.

CHAPTER VIII

WHAT ALCOHOL DOES TO CELLS

ACADEMIC men, particularly the German savants, are above everything else methodical. And so they demonstrated — methodically and conclusively — that alcohol is a chemical — definite and stable — the effects of which, allowing for slight modifications or variations due to idiosyncrasy, are uniform and well defined. Also that it produces physical, mental, and psychical phenomena which are readily investigated, and which yield surprisingly interesting — not to say actually startling — results. The conclusions — allowing for the personal equation — are quite as accurate as a mathematical problem, and equally as convincing as a demonstration in physics or in chemistry.

Now, the chief physical (or physiological) action of alcohol is strikingly shown when the leucocytes — the “White Soldiers of the Blood” — are subjected to its influence. Under the microscope it

is demonstrated that even a moderate quantity absorbed into the blood paralyzes the white corpuscles (phagocytes). They behave like drunken sots, they can't move fast enough to catch the disease germs, and when placed in the midst of a clump of malignant microbes are unable to kill and devour them. In the chronic alcoholic the microscope shows that the fighting powers of the white corpuscles are permanently reduced. This accounts for the lowered vitality of heavy drinkers — and to a lesser extent of any drinkers — and explains why pneumonia, typhoid, or grave infectious diseases are so fatal among them.

In fact, after continued heavy drinking, the microscope reveals that the phagocytes have lost their real nature, have returned to a condition of savagery, and, instead of defending their host and his body cells, have become degenerate cannibals, feeding upon the tissues and organs like disease germs.

The favorite food of these alcoholized corpuscles is the tender cells of latest development, the highest and most delicate in the biological scale. These are the brain cells. In proof of this, the presence of the gray matter of the brain can be demonstrated in the bodies of the leucocytes

of drunkards. This explains mental degeneracy among these unfortunates.

But, in addition to paralyzing the phagocytes, alcohol has three other methods of helping along the fair cause of degeneracy. The first centers in its fat-dissolving qualities. For alcohol has a much higher affinity for fat than an Esquimo has for blubber. Be it remembered that all fat dissolving substances are narcotics; and furthermore, the facility and rapidity with which they dissolve fats determine their power as narcotics.

Thus, ether or chloroform, dissolving fat more rapidly than alcohol, are stronger narcotics than alcohol, although their effects are more transient, and therefore less disastrous.

But alcohol also has an affinity for oxygen. It combines with oxygen to form an aldehyde (one of the steps towards the dissolution of alcohol into its elements). This oxygen hunger causes alcohol to rob the blood of its loose oxygen. This retards normal oxidation of food products, and causes the accumulation of effete and under-oxidized material. These products act as actual organic poisons upon the nerve cells and tissues — preventing their active functioning.

Alcohol has an especial fondness for water, which it seems to like much better than the man who drinks it. In its sense-deadening progress through the system it robs the tissues of this fluid. This accounts for the horrible thirst which follows hard upon the "morning after." The headache which usually accompanies this same condition — it may be interesting to know — is due to increased blood tension, to absorption of toxins, and to the congestion "reflexed" from the highly irritated stomach and alimentary tract.

These, however, are but surface manifestations. It is not in transient effects that the dull alcohol flood leaves its imprint, but in the degenerative changes which take place in the brain and nerve cells.

All poisons have an "elective affinity" for special organs or tissues. Inasmuch as the brain and nerve cells are composed largely of fat, oxygen, and water, and as alcohol, by its principle of dissolving fats, combining with oxygen, and abstracting water, works its insidious will with all three, we can readily understand, on a purely physiological basis, why a drinker should be wit-stricken.

When the fat is dissolved out of the brain and nerve tissue, it paralyzes their cell function. This

paralysis is, at first, only temporary, clearing up with the sobering process. But if the cause is repeated sufficiently often, the paralysis becomes chronic, and dementia, acute insanity, tremors, palsy, and various other brain and nerve diseases develop.

As a result of the abstraction of fat and water, the tissues tend to shrink (atrophy), the cells degenerate, or their delicate structures are completely consumed in the white poison, and they are replaced by connective tissue — dense, gristle-like substance, which serves none of the normal purposes for which the particular cells it replaces were intended.

Again, alcohol is one of the few substances that can force an entry into all cells. The protoplasmic cells ordinarily possess great powers of resistance. They can throw off or overcome the action of most poisons, and stop the entrance into their delicate interiors of substances injurious to them. But this is not the case in dealing with this Emperor among lethal drugs. For alcohol, in common with the other narcotic poisons, ether and chloroform, has the power to penetrate all cell walls with the greatest ease. And the more complexly organized the cell, the more easily and quickly it penetrates.

The more highly developed the cell, the higher the percentage of fat; and alcohol is a wizard when it comes to dissolving fat and sacking the inner shrine of the cell temple.

This effect is even more marked with those most delicate yet unresponsive of all cells — the germ cells. Dr. C. R. Stockard, of Cornell, makes this clear in a recently published record of his investigations relating to the inherited effects of alcohol on guinea pigs. Now, the cells of the body are divided into two great groups — those that do the everyday work of the body, and those reserved for the perpetuation of the species — the germinal cells. The germ cells are much more difficult to poison or to affect unfavorably than are any other cells in the body.

Yet Professor Stockard demonstrated that when guinea pigs were kept under the influence of alcohol for some time, their procreative cells were harmfully affected. Males so poisoned begat defective offspring, even when mated with perfectly normal females. The chief effect noticed was in impaired vision, and so profound an impression had alcohol stamped on the diminutive piggies that this defect was transmitted through three generations. There were also many instances of matings followed by

negative results or early abortions, still-born young, or defectives.

Other experiments proved that by giving one-half dram of alcohol to guinea pigs during their period of pregnancy, the young, even though viable at birth, which occurred but rarely, invariably died within six hours of birth.

Professor Laitinen treated rabbits and guinea pigs to as much alcohol in proportion to their weight as an ordinary sized man would get in a half-pint of beer per day. The young of the animals receiving this fractional dose of alcohol showed far less vitality than the young of normal rabbits. Their average weight at birth was less, and they gained in weight more slowly during the time of observation after birth.

And Professor C. F. Hodge reported remarkable hereditary effects of alcohol given to a pair of dogs. The amount given daily was not sufficient to cause any physical evidences of intoxication. Accepting the common idea that "moderation" is that amount of drink a man can stand without showing it, these dogs were only moderately poisoned. Yet but 17% of their young survived, while 90.2% of the puppies of abstinent dogs were sound and healthy.

The well-known practice of dwarfing puppies by giving alcohol in the food, is another example of the toxic influence of the drug upon protoplasm. The most significant feature in connection with this is the rapid response to relatively small doses.

Under the microscope, cells immersed in even a mild dilution of alcohol shrink and become distorted from the loss of water (dehydration) before spoken of, and by the retraction of the protoplasm from irritation. This process, going on in all the cells of their tender little bodies, explains the dwarfing of the puppies.

And what applies to animals applies to the cells which compose all animal and vegetable life. For instance, in experiments with the yeast plant, growing on natural media, after 11 hours 2061 cells were developed. Adding a .001% solution of alcohol, a number of cells were, during the same period of incubation, reduced to 1091; increasing this to a .01% solution, the cells were further reduced to 992; with a .1% solution, the number of cells developed dropped to 852; and when a 5% solution was employed, only 69 normal cells were found. This is one of a great number of experiments showing the disintegrating action of alcohol upon plant cells.

Similar experiments have been made upon animal cells. Dr. Kesteven, of London, showed that alcohol was distinctly poisonous to the ameba and other simple forms of protoplasm (living matter). The cells, placed under the microscope and treated to a 1% solution of alcohol, developed a narcosis that lasted for several hours. In a 2% solution, the deadening influence was increased so that every cell stiffened. Some died, while the others recovered after a time. With a 4% solution, the majority died, and a 5% solution was immediately fatal to every cell. This demonstration can be repeated by any one capable of using a microscope.

And here is an experiment that may be checked up, even by school children. Pots containing similar soil and the same kind of seeds were treated with clear water and with water containing alcohol in proportion of .1%, .2%, and .1%. Though treated exactly alike in all other respects, the difference in their growth is very pronounced.

Those seeds treated with pure water developed strong and vigorous sprouts, while those treated with alcoholized water showed retarded growth in proportion to the amount of alcohol employed.

Many of those treated with the .1% solution "died a-borning."

Coming higher in the scale of creation, and using the crayfish, perch, and goldfish as subjects of experiments, it was found that by adding alcohol, to make the water in which the fish were swimming equal to a .1% solution, they dropped immediately to the bottom of the aquarium, and unless quickly removed to unpolluted water, they promptly died.

Again, if a chicken's egg be immersed in a 5% solution of alcohol for two hours, or subjected to the fumes of alcohol for the same period of time, the life of the egg germ will be inevitably killed. No case is known where a chick developed from an egg so maltreated.

Keeping clearly in mind alcohol's power of paralyzing and killing leucocytes, its insidious fat-dissolving properties, its high affinity for oxygen, and its voracious appetite for water, and remembering how these processes are related to the physical economy, we can readily understand the various degenerative changes and conditions produced by its action, and also we can much better understand the phenomena of drunkenness.

CHAPTER IX

THE DOCTOR'S VERDICT

IS alcohol a stimulant or not? Has it any right to be classed as a medicine, as many conscientious physicians claim, and if so, what right?

These questions have puzzled scientists, split asunder the camps of the learned. It must be admitted that the almost universal belief of humankind — including many doctors — that a “good drink” is a “bracer” sows the seed for a powerful mental suggestion of benefit. In other words, the psychological stimulant influence of alcohol upon one dangerously ill, might on occasion weigh the Scales of Life in his favor.

But if he had the same faith — and many do — in an amulet, a few bread pills, or any inert and innocuous substance or treatment, he would derive from them the same, or even greater benefits. At least he would suffer no reaction, such as follows the use of the narcotic drug, alcohol, from them.

However, there is no longer any excuse for giving alcohol as a medicine or as a stimulant. For, apart from its temporary reflex action, due to its irritating effect upon the delicate mucous membrane lining of the stomach, alcohol, if it has any action at all, is a depressant.

Alcohol, given in diluted form, so as to avoid excitation by direct irritation, has been repeatedly given to dogs and men, without the slightest appreciable beneficial effects on the heart action or upon the circulation. Given in concentrated form, alcohol quickens the heart action in perhaps a slightly more marked degree than do mustard, essential oils, and other irritants, but it falls farther afterwards. The pulse pressure, which is temporarily increased immediately after the irritating reflex action of the fiery liquid, is permanently decreased. In other words, the pulse, after a momentary increase in size, becomes smaller. So if you want a temporary "kick," without paying too high a price in loss of energy for it, it would be far better to take a capsule of mustard or red pepper to accomplish this purpose.

The experiments which settled this highly complex problem are highly technical in their nature, and were made under the strictest test conditions,

using the plethysmograph, sphygmomanometer, and other instruments of precision for estimating and recording circulatory and blood-pressure changes.

When moderately strong alcohol — mildly diluted whiskey, brandy, etc. — were administered, the local irritation of the drug produced a reflex rise in blood pressure, and an acceleration of the heart's action, which reached its highest in about one half-hour, and then was invariably followed by a corresponding depression.

When, on the other hand, whiskey or alcohol — well diluted, and hence not irritating — was employed, neither the maximum nor the minimum blood pressure showed the slightest variation that reasonably could be attributed to the action of alcohol. Dr. Cabot concludes that "So far as could be determined, the action of alcohol upon the circulation is nil," for in none of his many experiments was there any marked change in the heart rate or blood pressure within one half hour of the administration of the alcohol, unless very large doses were employed. Then it was found that alcohol acted invariably as a circulatory and respiratory depressant.

This depression was most marked upon those

most in need of stimulus, as with typhoid or other septic cases. So the more a patient needs a stimulant the less he gets — from alcohol.

Therefore, while alcohol in concentrated form may act as an apparent circulatory stimulant, it cannot be regarded as a true tonic or stimulant, inasmuch as it decreases the heart's efficiency and lowers the pulse pressure. Alcohol has no more claim to be considered a tonic or a medicine than has oil of mustard, or a red-hot potato.

So the diversity of opinion among physicians concerning the value of alcohol lies in its psychic effect upon patients who are habitual users of the drug. In these it buoys the spirits, and engenders hopefulness and courage. But this same effect can be secured equally well by the administration of other remedies which give all the stimulating effects of alcohol on the physical organism, without any of its depressing after-results. And the time may come, in the not-distant future, when to prescribe alcohol in sickness may be considered malpractice. For alcohol is proved entirely too lath-like a weapon to oppose to Death, when the stake is life.

Many conscientious physicians nowadays refuse to prescribe alcohol, or even medicines in an alcoholic menstrum — not alone because of the

evil effects of the drug upon the system, but also for fear of arousing a dormant alcoholic craving in some susceptible patient. For not infrequently an intense desire for alcohol is flashed through deficiently resistant cells by a doctor's incautious alcohol prescription. None can say when or where atavistic traits may flare up. A youth may have had a grandfather who was an alcoholic — so powerfully addicted that he transmitted the craving to his grandchild — jumping, as is the biological custom, a sober generation, to work sinister havoc upon the second. The results are obvious.

This brings us to consider "medicated" wines, — most pestiferous and pernicious insults to intelligence. These invariably contain a large percentage of alcohol, and various other substances — such as malt, beef extracts, pepsin, iron, or even cocoa leaves. Wines that contain cocoa extract have frequently been responsible for the formation of the cocaine habit, one of the most dangerous and insidious of drug habits, and perhaps, of all, the most difficult to cure.

Most people who take medicated wines honestly are deceived by them, since they look upon them as medicine rather than as "booze." Some even imagine that the presence of the beef extract,

malt, or iron, renders the "dope" harmless; but this is far from true. Indeed, the very opposite is the case. Pickling malt or beef juices in alcohol lengthens the period required for their digestion, and thereby renders them less wholesome as food — for, of course, they can have no medicinal action, as such.

A few cents worth of freshly made Bland pills will give far better results than a dollar bottle of "iron tonic" — and without risking the creation of an alcohol habit, or poisoning the protoplasm with cheap whiskey.

Within the memory of many of us who are only slightly gray, it used to be thought that a jug of whiskey, a barrel of codliver oil, and a glad, free life in the open air, constituted a sure cure for consumption. But we know better now. We know now that whiskey is "bad medicine," and especially bad for lung diseases, because of its effects upon the blood vessels, the phagocytes, and its general lowering of resistance.

Dr. Jacques Bertillon, Chief of the Bureau of Municipal Statistics in Paris, and world-renowned as the originator of the famous Bertillon system of measurement — has given as his opinion that alcohol may well be called the principal con-

tributing cause of tuberculosis. Supporting this contention he cites the mortality statistics of 100,000 men of all ages, which show the death rate among abstainers to be less than half that of alcohol users—21.8 % among alcoholic patients, as against 9.9 % among abstainers.

In another study of 500 cases of tuberculosis, the use of alcohol was followed by a 40 % higher mortality than occurred among those receiving no alcohol.

In France similar results were noted—immoderate drinkers dying in proportion of 52.8 %; moderate drinkers in 25 out of 100 cases; while abstainers had a mortality of only 18.5 %.

The International Tuberculosis Congress, meeting recently in Paris, affirmed the relationship of alcohol and tuberculosis when it officially proclaimed the necessity of proceeding against both, if tuberculosis were to be vanquished.

Also, the poisonous effect of alcohol on the circulation causes congestion, the formation of toxins, and the retention of waste material. The extra labors placed upon the heart in an endeavor to overcome this condition quickly result in fatigue, which falls most heavily upon the lungs and nerve centres.

This helps explain also the diminished resistance of alcoholics to pneumonia as well as to tuberculosis and other lung diseases. This was emphasized during a recent Anti-Alcoholic Congress in London. A study of more than 2000 cases of pneumonia, half of which were treated with alcohol and half without, showed a mortality of 31 % when spirits "stimulation" was resorted to, and only 19 % when alcohol was tabooed.

In two large cities in the East studies of death from pneumonia educed the significant fact that, in patients under 50 years of age, from 65 % to 70 % of those mortally stricken had an alcoholic history.

And this suggests that if singers only realized the pernicious effect of alcohol — especially upon the delicate mucous membrane lining of their respiratory passages and "voice box" — they would embrace it with the same ardency and joyous abandon that they would a pestilence.

For alcohol, by its hardening and toughening effect upon the square foot of delicate mucous membrane which the singer uses in his business, causes the outer layers of this membrane to degenerate so as to be utterly incapable of performing normal functioning, until such time as

new tissue shall have been created to replace that destroyed by alcohol erosion. This accounts, in part, for the hoarseness and the exaggerated resonance of the "morning after" voice.

Catarrhal conditions of the pharynx and vocal passages are excited by an allopathic indulgence in beer or light wines. The relaxation of the uvula, soft palate, tonsils, and fauces is most marked.

Also, it is alcohol, and patent medicines containing alcohol, which are largely responsible for the prevalence of catarrh of the stomach and intestines — so frequently forerunners of grave and even fatal maladies.

In cerebral hemorrhage more than 50% of patients dying are regular users of spirits. And many so-called cases of "heart failure" and sudden collapse have the same grim history.

In Munich they have worked out, with painstaking German thoroughness, the exact relation between alcohol and degeneracy. In a city where every man, woman, child, and suckling infant consumes a per capita allotment of an average of 287 pints of beer a year, this, as might be expected, is not difficult.

The alcoholic content of this amount of beer is equal to 6 glasses of brandy a day for all hands.

Professor Bollinger, who made autopsies on about 6000 of them, assures us that every sixteenth male in Munich dies of "Munich beer heart," and he adds, for our further edification, that "One rarely finds in Munich a faultless heart and a normal kidney in an adult man."

Also, long experience has demonstrated that no case of rheumatism or neuritis promises a successful outcome unless alcohol be absolutely interdicted.

While not distinctly a subject of medical interest, it might yet be pertinent to note that alcohol seriously mars beauty in women. It roughens the skin, and produces discolorations and pimples. By inhibiting the action of the vasomotor nerves — which regulate the expansion and contraction of blood vessels — it causes a chronic congestion in the tiny capillaries underlying the skin. Which dilation, if long enough continued, becomes permanent, because the "elastic" will have gone out of the blood vessels. This causes the skin to become red and flushed, or, in cold weather, leaden or dull purple, and produces the characteristic bulbous nose associated with alcohol drinking.

Alcohol also makes the breasts flabby, by robbing the supporting muscles of their normal vigor and tone.

And, as alcohol is responsible for much of our present-day neurasthenia, it follows that to it can properly be charged a considerable proportion of the wrinkles, crowsfeet, and haggardness of the neurasthenic. This, entirely apart from its subtle but certain effect in stamping its unmistakable stigmata upon the countenance of every woman who regularly uses the insidious drug.

Yet alcohol is of undoubted value—used externally. In fevers, particularly, applied to the surface of the body, its chemical, water-absorbing, and rapid evaporation properties give it a grateful refrigerant action. An alcoholic sponge bath means chemical absorption of the surface moisture of the body, with diminishing temperature, and relief of capillary congestion. This is the nearest alcohol comes to being a medicine.

For, taken internally, alcohol is a narcotic; paralyzing, corroding, or irritating every variety of tissue in the body, and the more delicate the tissue, the more pronounced the action.

Only recently it has been demonstrated that alcohol hinders the formation and the accumulation of glycogen in the liver, thus materially lessening the body's natural resistance to infection, and decidedly encouraging auto-intoxication from in-

testinal poisons. The observations of Combe, Bouchard, von Norden, Bunge, and numerous other authorities have demonstrated beyond cavil the enormous rôle played by intestinal auto-intoxication in both chronic and acute disorders.

In certain kinds of work, alcohol, by breaking down resistance, renders the worker especially susceptible to disease, thereby intensifying the danger involved in the work itself.

For instance, those who work with lead, as paint-makers, painters, etc., are much more liable to lead-poisoning as drinkers than as abstainers, because the natural resistance of the body is lowered in trying to overcome the effects produced by the lead.

And when the debilitating effects of the alcohol are added to the dangers of the lead, phosphorus, arsenic, or what-not, the resisting forces of the body are overcome much more quickly than if only one enemy at a time is fought.

The same principle applies also to those who are required to work in intense heat, because the physical and nervous resistance have been depreciated by the action of alcohol. Alcoholics are, therefore, peculiarly liable to sun-stroke and heat prostration.

Alcohol has also a pronounced and degenerating effect upon the teeth. Dr. Floras, a pupil of the eminent von Bunge, and surgeon to the Anatolian Railway in Asia Minor, examined the teeth of 729 employees, divided into the strictly abstinent Moslems, and those who had fallen into European drinking habits.

Counting the number of decayed teeth in each class (their habits of life, except for drinking, being identical), he found that the average number of decayed teeth to each drinking workman was almost double that found in the abstinent class. In workmen between 46 and 50, this average rose to nearly 4 times as many. Professor Bunge, and other physiologists, have since repeatedly corroborated Dr. Floras' findings.

It is also significant to note that Dr. Bunge finds a distinct decline in nursing power accompanying decay of the teeth, and predicates both as being due to one cause, viz.: alcoholism.

So it would almost seem, as Professor Bunge says, that, to dry up the springs of race degeneration, of which alcohol is the chief one, is a problem the solution of which admits of less delay than any other.

Dr. William H. Welch, Ex-President of the

American Medical Association, says: "Alcohol in sufficient quantities is a poison to all living organisms, both animal and vegetable." Dr. Howard A. Kelley adds: "It is clear, in the light of experience and of recent research work, that alcohol should be classed in the list of dangerous drugs, along with morphine, cocaine and chloral. On the basis of experience I appeal to my colleagues everywhere to abjure its use."

Dr. T. Alexander MacNichol, in one of his addresses, says: "Fifty years ago men commonly believed that alcohol was food, tonic, and stimulant. But the invention of instruments of precision, and the application of more exact methods of examination have revolutionized our attitude. In the light of modern science alcohol is not a food, a tonic, or a stimulant."

In a word, science has classified alcohol as a universal protoplasmic poison to all forms of organic life.

And Sir Victor Horsley remarks: "We cannot estimate what minimal amount we can safely take into our bodies and say that it will not be detrimental to our tissues."

The Society for the Study of Inebriety, concurring in the opinion of the English society, finds

that alcohol has no tonic or stimulant power; that its real effects are invariably narcotic and paralyzant.

Dr. Louis D. Mason, President of the American Society for the Study of Alcohol and other Narcotics, delivered an address recently, in which he said:

"A large majority of the leading and influential practitioners of medicine and surgery in this country and Europe are excluding from their practice alcohol in any quantity, and also denouncing it in any form as a beverage. The great hospitals of every scientific centre reflect their action."

Dr. T. D. Crothers, of Hartford, after a lifetime's study of alcohol and its effects upon the human organism, concludes that "The wide-spread use of alcohol as a beverage, and the delusive theories which have grown up about it in medicine, are due exclusively to its fascinating narcotic action for the relief of pain, discomfort and suffering. It is not stimulation that is sought, but narcotism, anaesthesia and relief."

So twentieth century expert medical testimony renders its final verdict in this: Alcohol has no helpful function to perform for the human system,



either in health or disease, as a beverage or as a medicine, under any circumstances, in any form or quantity, or under any condition. It is the most deadly and far-reaching, in its deleterious results, of all epidemics. It has no antitoxin, no vaccine — except the powerful preventives of intellectual sterilization and mental sanitation.

CHAPTER X

ALCOHOL, THE DEATH'S HEAD

I BELIEVE it is generally conceded that only live men are efficient.

Therefore, it might be well to consider how much of his life a drinker loses by moderate drinking.

The Association of Life Insurance Presidents take a lively interest in this matter, also they exhibit a justifiable pride in the accuracy of their statistics.

Based upon a report of two million cases tabulated from the records of American and Canadian life insurance companies in the past 25 years, Dr. Arthur Hunter, Chairman of the Central Bureau, Medico-Actuarial Mortality Investigation, claims that the span of human life is reduced four to six years as a result of the use of alcohol. In other words, consistent users of alcoholic drinks die six years younger than

they should, and one-time consistent drinkers, who "reformed" before they took out life insurance policies, die four years younger than they should.

It is interesting to note also that poetic justice makes saloon keepers and liquor dealers suffer maximum loss of life. Those connected with the sale and manufacture of liquor, especially hotel proprietors and saloon keepers, have an extra mortality of 70 %; that is, on account of their occupation, their lifetimes are reduced on an average of about 6 years.

Mortality among men who at one time used intoxicants, but who had reformed prior to taking out insurance policies, is 50 %, or a reduction of more than 4 years in the normal life expectancy. So, even though a steady drinker became a veritable saint of sobriety, he would be a shorter-lived saint than he would have been had he always been a saint.

The men who use alcoholics daily, but not to excess, Dr. Hunter divides into two groups:

A. Those who take 2 glasses of beer or 1 glass of whiskey a day.

B. Those who take more than that, but are not "excessive" drinkers.

The expert's investigation disclosed that the mortality in the second group was 50 % higher than in the first. Also, the New York Mutual Life Insurance Company, from 1875 to 1899, found that among insured abstainers the death rate was but 78 % of the expected rate; among non-abstainers it was 96 %.

On the basis of their statistics, insurance men calculate that if Russia, for instance, persists in banishing all alcoholic beverages from within its borders, a million lives will be saved to that awakened country within the next ten years.

Many also are prompted by the white maggots of despair that crawl in the brains of alcoholics to solve their difficulties by making their hasty quietus. According to the United States mortality reports, 23 % of the suicides in the United States are directly traceable to intemperance. Between 1900 and 1908 it is estimated that 11,986 persons killed themselves because of alcohol.

E. Bonnell Phelps, who is recognized as one of the most careful and conservative of statisticians, in his "Mortality of Alcohol," claims that 65,897 deaths per year are due to the use of alcoholic liquors. This estimate signifies one adult death

every 8 minutes, or, in other words, 1 man in every $7\frac{1}{2}$ who die in the United States dies because of drink.

The claim is also made that, of the 1000 deaths among drinkers, 440, or nearly one-half, are due to alcohol.

If we concede that alcohol is responsible, as the chief causative factor, in many cases of Bright's Disease, tuberculosis, heart disease and fatty degeneration, pneumonia, hardening of the arteries, degeneration of the liver and pancreas, apoplexy, suicide, accidental injury, paralysis, chronic gout and rheumatism, toxemia and auto-intoxication, dementias, delirium tremens and alcoholic insanities, increased susceptibility to occupational and infectious diseases, inability to withstand surgical operations which if performed might have saved life, increased infant mortality from decreased powers of lactation in nursing mothers, gastritis, and epilepsy, it might almost seem as though the enthusiasts have underestimated, rather than overestimated, alcoholic mortality.

On the weight of the highest scientific authority in the world, alcohol is the most distinct and prominent of all causes of death in persons under 50 years of age, and one of the most deadly, the

most far-reaching, and the most degenerative of all the causes of mortality.

Professor Kraepelin insists that not only is alcohol the immediate cause of approximately a third of all his cases of mental disease in Munich, but that in a large series of pathological conditions—including paralysis, epilepsy, and arterio-sclerosis—it is the chief factor, and one of the most important causes of degeneracy. Confining his observations to only one clinic, he reported that of 836 men treated, 253, or 33 %, were there because of alcohol and its effects. Women do much better—only 3.6 % of them requiring attention because of alcoholic degeneration.

Beer—the kind that made Munich famous—played the heavy villain in the tragedy of these wrecked lives, although 40 % of the victims drank schnaps as well.

In this country the ratio is slightly lower, but high enough, in all conscience. For, it is definitely established that fully 30 % of the men, and 10 % of all women admitted to State Hospitals in the United States are suffering from conditions brought about, directly or indirectly, through alcohol.

The Danes, who have a passion for tabulation and statistics second only to the Germans, have

proved the very interesting and significant fact that every pint of brandy a man drinks shortens his life by 11 hours, and every pint of beer he consumes curtails his earthly sojourn by an average of 25 minutes.

The method of arriving at these astonishing results is simplicity itself. The Governmental Commission sent to all Danish physicians a request for information concerning deaths among adults occurring in their practice for one year, with especial reference as to whether or not the cause of these deaths could be traced to drink. Only such cases were credited to alcohol as were admittedly drink-engendered. Answers came concerning 4309 dead men and 4280 women — a trifle over one-third of the mortality in Denmark for that year.

The tabulation of these reports show that there was, as Hamlet observed, something rotten in the state of Denmark. For 23 % of male deaths and 3 % of mortality among the females were shown to have been caused by the misuse of alcohol. So the Danish statisticians got a sheet of paper and a stubby pencil and did some figuring.

This was the problem: If all these alcohol deaths were eliminated from the total, the average

longevity of a man of 20 would rise from 45.4 to 49.3 years; and of a woman from 47.5 to 48.1 — respectively 3.9 and .6 years — which, by the way, is slightly less than our American insurance experts have found in their recent investigations concerning this matter.

Given these figures, and using the per capita consumption of alcohol in Denmark as a divisor, the results proved, as we have seen, that every pint of brandy consumed steals 11 hours out of a man's normal expectation of life, and every pint of beer drunk cheats him out of approximately 25 minutes of earthly activity.

So, a Congress of 800 of the most eminent professors and medical men in Germany conclude that:

“Alcohol, even in moderate quantities, causes disturbances in the brain's action, paralyzes critical capacity, power of will, and the ethical and esthetic sense. It is a poison, and no longer may be classed with foods. Its use lowers resistance to sicknesses and shortens life. Those who abstain wholly have a greater capacity for work and endurance, both intellectual and physical.”

And the International Conference on Alcoholism — composed of scientific men from all the great

nations — agreed with this when, after comparing and confirming the results of world-wide investigation, they drew up a report defining alcohol as “a poison, destructive and degenerating to the human organism,” and added that “its use should be limited and restricted in the same way as the use of other poisonous drugs.”

CHAPTER XI

ALCOHOL AND ACCIDENTS

ALCOHOL is a quicksand, swallowing the life, health, efficiency, and substance of the human race. And not the least of its black record is its accident score. For the befogging of brains with beer renders the possessors of the former extremely susceptible to accident. Professor Dr. Guttstadt has noted that, for every 1000 injured in the trade unions of Germany, 43 were injured by accident; while among the brewers the number rose to 109 per 1000. In Berlin the proportion is even greater, for in one year there were recorded 412 accidents among every 1000 insured brewery workers (2208 accidents among 5364 brewers insured).

In the building trades—including the extra hazardous occupation of roofing—the number of accidents was but 65 per 1000. It would almost seem a merciful injunction to shout at a drinking

workman: "Get away from that wheelbarrow. You are not fit to handle machinery anyway."

Every year, 500,000 workmen are killed or incapacitated in the United States by accident. Of these, from 30,000 to 50,000 are killed, or, roughly, one life for every 15 minutes. These 500,000 figure a financial loss to the country of not less than \$250,000,000 annually. Industrial accidents are due in part to mechanical causes, in part to human causes, and in part to a combination of the two. Among the human factors in accidents is the excessive use of alcohol.

"The problem of safety," says James McCrea, President of the Pennsylvania Railroad, "is not altogether a question of rules and enforcement, of appliances and their application, but of inherent self-restraint and control."

It is this function of self-control that alcohol first strikes down in its attack upon the drinker.

With this in mind, the Pittsburgh Steel Company, employing 5250 men at a monthly expense of \$300,000, went so far as to address a letter to the license judges of their county, protesting earnestly against the licensing of saloons. They said:

"We have experienced a growing inefficiency and

an increased carelessness in the mills, resulting in accidents and deaths, largely attributable to the excessive use of beer, whiskey, and other alcoholic drinks. Eighty-five per cent of such accidents are attributable directly or indirectly to liquor. Efficiency has been so reduced in recent years as to show that at least one-tenth of our pay-roll is paid out for services not rendered, and 20 % of the money we pay our men is spent upon liquor and lost to the use of their families."

Mr. Charles L. Huston, Vice-President of the Lukens Iron and Coal Company of Pennsylvania, claims that there was a decrease of 54 % in the number of accidents the first six "dry" months in Coatesville, compared with the corresponding months of the previous year, when the town had license.

In 1912 an engineer on the Lackawanna Road, who had been on an alcoholic debauch the night before, ran his train past three signals warning him to stop. He proved tragically that alcohol is likely to render one less able to proceed correctly and act upon signals, as his deficiency cost 40 lives, and more or less grievously injured 75 passengers. It was after this accident that Mr. George A. Cullen, Traffic Manager, issued this rule: "There is only one absolutely safe course to be

followed by a trainman, and that is to abstain altogether from the use of liquor. Our men must not drink or enter saloons hereafter, even when off duty."

Superintendent Johnson, of the American Car Foundry Works, testifies that industrial accidents due to alcohol decreased over one-third after an evangelistic campaign which induced many workmen to sign the pledge. And Mr. W. R. Fox, Vice-President of the Fox Typewriter Company, writes me: "We have had only 2 serious accidents in the plant in 20 years. One was a very serious injury to a man we afterwards learned was intoxicated, who had his face torn open while trying out a grind-stone."

Carefully compiled German statistics show that in accidents requiring less than 4 weeks for recovery, at all ages between 15 and 74 years, drinking workmen had from 95 % to 220 % more accidents per 1000 men than non-drinking workmen. In more serious accidents requiring more than 4 weeks for recovery, drinking workmen had an even more excessive rate.

In America medical directors of three great life insurance companies estimate that from 7 % to 43 % of accidents are due, either directly or indirectly,

to alcohol. Seven per cent of railway accidents, 8 % of street car accidents, 10 % of automobile accidents, 8 % of those due to vehicles and horses, 43 % of heat prostrations and sun-strokes, 7 % of machinery accidents, 8 % of all accidents in mines and quarries, 13 % of drownings, and 10 % of gunshot wounds, are sustained, either in whole or in part, because of alcohol.

Dr. Charles W. Hitchcock, Chief Surgeon of the Standard Accident Insurance Company, informs me that: "Our long experience with all kinds of accident claims has served to confirm the general belief that alcoholics do not present normal resistance, and that long-continued and persistent use of alcohol invariably so lowers vitality as very much to increase the length of disability resulting from accident."

A most interesting relation between alcohol and accidents is found in the statistics of the days of the week on which accidents occur. The Zurich Building Trades Association, from records covering 7 years, found that an average of 22 % of the week's accidents occurred on Monday, an average of 15.7 % on the other days of the week. In other words, there were approximately three accidents on Monday as against two on the other days.

This has been corroborated by the German Imperial Insurance Office, which compiled statistics for two decades, commencing in 1887. Its findings showed that invariably Monday averaged the highest record for industrial accidents. The high accident rate is undoubtedly due to the use, or abuse, of alcohol, and the fatigue following the Saturday and Sunday debauch. For, as we have seen, the effects of alcohol persist 24 hours or more after drinking, even though the drinker may, so far as the naked eye is concerned, be free from evidences of intoxication. Still, this "hang-over" from the Saturday night and Sunday drinking, added perhaps to the factor of loss of technical skill during the week-end rest, pushes up the Monday accident rate.

Alcohol increases accidents because it impairs faculties that ordinarily would take necessary precautions against danger; it impairs nerve control, causing unsteadiness of hand or dangerous missteps; it lessens ability to recognize danger; and it interferes with ability to avert danger when recognized. Alcohol also begets a certain exuberant self-confidence, which in the presence of danger amounts to recklessness. The man who has implicit confidence in his own powers — a confi-

dence superinduced by drink — is the man who is likely to attempt repairs on his machine while it is yet in motion, or to do other equally foolish or reckless things.

As illustrating the impairment in the power of judgment, tests made in eye measurements demonstrated that the amount of error after taking a bottle of light wine was more than three times as great as at periods when no alcohol was taken. The judgment which errs to this extent as to the distance between the hand and the moving belt, saw, cog, die, or knife, may at any moment entail upon the owner of that hand irreparable loss.

This impairment is emphasized in United States Senate Document No. 645, Volume 11: "The margin of safety in modern industry is small. It is measured too frequently by fractions of an inch. Reduce the alertness and the exactness with which the body responds to the necessities of labor, and by so much have you increased the liability that the hand will be displaced that fraction that means mutilation."

Hearing also is made much less acute by alcohol, particularly in the matter of distinguishing sounds and interpreting their meaning. This is a fact of great significance to the workman who, amid the

roar and jar of machinery, should be able quickly to detect the slightest changes in sound which may indicate that something has gone wrong.

It is not the obviously intoxicated man who is the greatest source of accident. Any competent foreman can pick such a man out as far as he can see him, and promptly pack him home. The man, however, who is laboring under the results of heavy drinking may show few or no outward signs of it, and yet be definitely deficient in the control of his faculties.

It is fair to state, however, that with a shorter work day, permitting workers to stop before the physical limit of exhaustion has been reached, and before their toxemia-loaded systems cry out for some stimulant to tide them over their arduous period — there is a distinct falling off in the desire to indulge in liquor.

Mr. Boyd Fisher, Vice-President of the Club of Detroit Executives, recognized this when he said: "A good many Detroit employers are wise enough to see that in a large number of cases excessive drinking is a direct result of too long hours at monotonous work. Wherever they have shortened the working hours, they have minimized the drinking and secured a compensative increase in output."

The Burroughs Adding Machine Company furnishes an example of this. This firm voluntarily shortened the working day from 9.5 hours to 8 hours. A noticeable decrease in drinking followed, and what is equally gratifying from the economist's standpoint, a slight average increase in the output.

The loss to the employer through alcoholized employees does not end with the causation and result of accidents or other economic loss. For it is well known that the body tissues of the steady drinker are often so weakened by alcohol that injuries affect him much more seriously than they do the abstainer. Recovery is delayed, and even death may occur as the result of an accident which under ordinary circumstances should have terminated in recovery. The Leipzig Sick Benefit Societies found that alcoholists, from 25 to 34 years of age, lost 372 days in recovering from wounds for every 100 days lost by the non-drinker, while their death ratio was as 4 to 1.

This indicates an undoubted increase for compensation expenses for the drinker or his family for three salient reasons: the greater frequency of accidents, a more protracted recovery, and a heavier death toll.

The South Australian Benefit Societies' statistics

point clearly to the industrial health loss through drink by comparing abstainers and non-abstainers. Societies requiring abstinence as a tenet of their creed average not more than one-half as much sickness per member as Societies which do not exact abstinence. In point of duration of illness the abstaining men lost from work on an average of 6.4 weeks, while the non-abstaining Society members lost 10.9 weeks. The death rate was also 2 to 1 in favor of those to whom alcohol was tabooed.

Interruption of work by more frequent and longer protracted sickness among drinkers is only one of many losses imposed upon industry. Statistics prove that the death rate of drinkers tends to increase during the prime of life — from 25 to 45 or 50 years of age. These should, by rights, be the years of highest activity in physical and mental powers. The years, therefore, spent in acquiring skill and efficiency, fail to bring their maximum return if life be prematurely cut off, or if the worker be disabled intermittently or permanently by disease.

It is small wonder that Industrial Prohibition spreads; that the Insurance Department of the State Industrial Accident Commission in Los Angeles has ruled that an employee injured after

drinking is not entitled to compensation; and that the United States Government found that 77% of upwards of 7000 employers discriminated against even moderate drinkers. Also that the business man is more and more prone to toast the drinking workman in this trenchant alliteration: "The last man hired — the first man fired — the man who drinks."

CHAPTER XII

ALCOHOL AND WAR

AS might be expected, that condition which, if carried to excess, makes a man see blue rhinoceroses — and two of them at that — sadly interferes with a soldier's killing powers. If a soldier is to be really efficient he must be able to shoot accurately; he must have a good eye for distances, and be capable of stabbing, cutting, slashing, and hacking intelligently and expeditiously; he must remain steadfast under an amount of hardship that would kill a goat; he must have a heart and muscles that will stand long forced marches. Altogether he must be a splendid human animal, "fit" in the highest possible degree.

Now, because of the fact that they can be kept under close observation — like hospital patients — and are even more amenable to discipline than are most hospital patients — the armies of the world have furnished us with instructive and highly edifying alcoholic data.

Amid such a lush and luxuriant profusion of startling and valuable statistical material, it is difficult and embarrassing to select examples for these pages.

Accurate shooting presupposes a clear brain, bright eye, and steady nerves; the same equipment a bridge builder needs when, on a terrifyingly precarious footing 200 feet in the air, he tosses or catches the white-hot rivets intended to bind the heavy girders in a metallic embrace.

The same physical and mental efficiency is required of an automobile driver who must judge speed and distance with unerring accuracy, in order to avoid running down pedestrians, or escape wrecking his car.

The same keenness of eye and sureness of judgment is demanded of a woodsman felling giant trees, or driving great logs through turbulent waters. The same skill, strength, and endurance are necessary in the railroad man, the telegraph operator, the engineer, the sailor — in fact, in any and all whose work is not desultory, or automatic.

With the facts in hand, it should not be difficult for us to apply their meaning and bearing upon almost any specific occupation. So let us examine more evidence.

It will be remembered that Dr. Fuerer demonstrated that relatively small amounts of alcohol kept a man intoxicated more than 48 hours. The subject, of course, did not know he was in that condition described by Burns as "a wee bit drappie in the eeye," but the memory and idea association tests knew it — and there was no guess-work about their verdict.

Shortly after the report of the Heidelberg investigation, a Swedish officer, Lieutenant Bengt Boy, of the Karlskrona Grenadier Regiment, conceived the idea of translating Fuerer and Kraepelin into terms of military efficiency.

Selecting three corporals and three privates, all accustomed to drink, he placed a target at a distance of 300 meters, and tested the shooting capacity of his squad in various ways — with and without alcohol.

The dose of alcohol, taken a half hour before beginning the experiment, was two-thirds of a wine glass of Cognac (equal to a pint of "domestic" beer), in addition to the same quantity of punch on the evening before. This was preparatory to determining accuracy — or the lack of it — in shooting. For the endurance test two-thirds of a pint of beer was given. Even the most captious

must admit that this was moderate drinking — the kind the average man considers harmless, or perhaps even necessary.

The tests under alcohol influence however showed, without a single exception, a decreased number of hits, although, as has been frequently noted in these psychic experiments, the subjects were certain that they had done better by reason of the “stimulating” effects of their liquor or beer.

Lieutenant Boy also made trials with precision shooting; rapid firing — to test the number of shots which could be discharged in a half minute — salvo firing, and again, to prove endurance, with 50 shots fired in rapid succession.

The average number of points for the men and series in the accuracy experiments was:

In 6 series without alcohol — corporals, 19.22 points; privates, 15.24.

In 7 series with alcohol — corporals, 17.95 points; privates, 11.34.

In the non-alcoholic tests for rapid firing the number of false shots — shots which completely missed the target — averaged but 4.6. Under the gentle influence of the very moderate liquor allowance, the false shots ran up to an average of 27.

Had these soldiers partaken of anything like the quantity of liquor many thousands of our fellow citizens consider necessary in order adequately to celebrate "pay night," Lieutenant Boy's awkward squad would have required a barn for a target. And even then they might have missed a fair proportion of shots, unless perhaps they happened to be placed inside the barn.

In the endurance tests of 200 shots apiece there was an average of 359.5 points when no beer was taken. But with two-thirds of a pint of beer under their cartridge belts the soldiers averaged only 277.5 points.

"Assuming," said Lieutenant Boy, in reporting his results, "that a hitting value of 4 points is equivalent to putting one man out of action, in the first abstinent series 99 men would be struck by the 200 shots; in the beer series only 69 — a difference of 30 men."

One understands, in view of these results, why they say in Sweden that "Lieutenant Boy has shot moderate drinking to death."

It may be well here to emphasize that Lieutenant Boy's was not an isolated experience. His results have been duplicated and corroborated time and again. One classical and even more

convincing demonstration was reported by a captain in the Bersaglieri — a corps of the Italian service — whose regiment, under the influence of a pint of Chianti per man, averaged only 3 hits out of 30 shots, while on their “normal” days they averaged from 25 to 26 hits out of 30.

This deficiency, which the “temperate” use of beer and wine causes soldiers in the calculating of distances, in setting of sights, in loading, in firing, and in general judgment of a situation, is paralleled by many other injuries to an army’s effectiveness.

For one thing, alcohol lowers marching capacity. This has been repeatedly tested in various of the continental armies, notably in the Bavarian regiments. For example, in the “cold weather march,” a trial of marching capacity was made over approximately 65 miles of road between non-abstainers and abstainers. Of the first category, only 46 % completed their task. While, of the sober contingent, 92 % reached their goal. Of the first 25 men to arrive at their destination, 63 % were total abstainers.

General Lord Kitchener now enforces abstinence among his troops. He has profited by the campaigning experiences of General Wolseley of the

British army, who tried out the effects of alcohol drinking on endurance. To some of his men General Wolseley gave alcohol, to others none. The results were carefully noted by his officers and regimental surgeons, and demonstrated conclusively that the men receiving no alcohol were livelier, fresher, and in more buoyant spirits, and also marched better than those who had alcohol. In fact, the difference was so marked that later, General Kitchener gave strict orders that no alcoholic drinks of any kind were to be taken with the army.

The African explorer, Dr. Peters, saw in the successes of the Japanese army in Manchuria the first decisive victory of the temperate peoples over the alcoholized nations of the world.

Count von Haeseler, of the German Army, asserts: "The soldier who abstains altogether can accomplish more, march better, and is a better soldier than the man who drinks even moderately. Brandy is the worst poison of all. Next to it comes beer."

Sir Frederick Treves, Bart., one of the most distinguished and scholarly of living surgeons, adds this concerning alcohol and deficiency: "It is well known that troops cannot march on alcohol. I

was with the Relief Column that moved on to Ladysmith. In that column were some 30,000 men. The first who dropped out were not the tall men, or the short men, or the big men, or the little men — but the drinkers.”

And General Leonard Wood writes me to the effect that “My personal impression is that the general effect of alcohol is unfavorable. I think soldiers are much better off without it than with it. Men who do not habitually use it are much less susceptible to fatigue and exposure than those who do.”

Not only is the work value and endurance efficiency of fighting men materially reduced by their indulgence in alcohol, but it has been shown that their physical efficiency suffers also. For proof of this, we need go no further than our own Navy, which, as is well known, “went on the water wagon” July 1, 1914.

But it is not generally known that the most potent reason which influenced the action of the Secretary of the Navy in proclaiming navy-wide prohibition was the fact, revealed by the Medical Inspector of the United States Navy, that there were nearly 10 times as many cases of alcoholism admitted to hospitals in the American Navy as in

the British Navy, and 50 times as many as in the German Navy — in both of which famous institutions of learning, alcohol is practically taboo.

Secretary Daniels concluded that if alcohol was sending so many men to the hospitals, it must undoubtedly be rendering inefficient a much greater number who did not get as far as the hospital. So, in the fair name of efficiency, alcohol is banned forever from the American Navy.

In these piping times of war when one of the chief soldierly activities consists in digging trenches, the "slowing up" effects of alcohol have been interestingly noted. Dr. Parks, of the British Army, tested this matter out in an eminently practical way.

Two groups of men were set to digging, and the amount of work done by each group was most carefully estimated. One of these bodies was allowed a full ration (which in England means a pint) of beer. The other group received no alcohol of any kind.

It was found that the abstaining group rendered from 18 % to 20 % more work value than the beer-drinking group. But the most interesting factor of the experiment developed when these

groups were transposed — the teetotalers receiving beer, the drinkers going back to tea. For the figures automatically reversed themselves, and showed the same proportion of approximately 18% to 20% less work accomplished by the drinkers as compared with the non-drinkers.

If we multiply 20% of a laborer's daily wage by the number of laborers in the United States who drink, we may perhaps get a fair idea of the amount of money actually lost to railroads, contractors, and employers of labor everywhere, as a result of the drinking habits of their employees.

And this also is curious, and highly interesting to a hero who must part with a much-valued leg, or a large fragment of his skull. When a man is narcotized by one variety of dope, it is difficult to subject him to the influence of any other — even though this be for his own good. This was definitely established during the Morocco campaign, when army surgeons found it almost impossible to chloroform drinking soldiers. Their narcotized and alcohol-soaked systems were practically unaffected by other narcotic poisons.

Drink is not very popular in any of the armies of the world, and it is rapidly becoming less so.

So far back as January 1, 1906, the Swedish

Government forbade the sale of beer and spirits in all army canteens. Subsequently, during maneuvers, entire districts in which the army operated were put under strict prohibition. And the Danish Government no longer permits spirits to be sold in its army.

On November 2, 1911, the German Navy discharged a broadside into John Barleycorn's adamantine hide by sending this trenchant order to the Baltic Naval Station: "Henceforth the grog receptacle is to be used as salt-holder for the crew."

And to still further hit Gambrinus below his Germanic belt, the document entitled "Alcohol and the Power of Resistance," which has been put into the hands of hundreds of thousands in the German armies, contains this significant and thought-compelling passage: "Many do not suspect what a destructive poison they are taking into themselves, and what devastation this poison has caused, and still causes, among the German people. They do not understand what moderation in the use of alcohol is, and that the limit at which it begins to work injury to mind and body is very soon reached — much sooner than the majority of German people believe."

Which stimulates this further inquiry. Why should not the experience of military and naval men apply with equal force to all the vast activities of industrial life? And if they so apply, why should not the Government demand of its employees, and corporations ultimately require of their workmen an abstemiousness that inevitably makes for a vastly increased efficiency? Indeed, why should not mankind in general, as a matter of health and principle, desist from putting into its stomach that which insidiously and perniciously increases deficiency—which makes second- and third-rate men out of first-class human material?

It remains to be seen, however, whether or not the voluntary abstention from alcohol by the King of England and innumerable high dignitaries will do for the sobering of Britain what the prohibitory Ukase did for Russia, and whether the expected increase in the efficiency of those engaged in turning out implements of wholesale murder will develop. Also whether the noble self-sacrifice of their rulers will pacify these bully Britons, and make them more contented with their beerless lot.

I should be inclined to hazard the prognostica-

tion that nothing short of a sweeping prohibitory enactment will divorce the Englishman from his ale. For, "Britons, never, never will be slaves." Except when they want to be. And where liquor is concerned it seems quite patent that they want to be. Until the masses in England are impressed with the conviction that drink is an evil no suasive measures will likely be successful.

This agitation will probably cause the enactment of mildly restrictive measures, early closing hours, laws against drunkenness, etc. Or England may take over the breweries and distilleries, and make an honest dollar for herself by going into the poison-peddling business.

Of course, the staggering drink bill of England is a powerful inducement for some sort of restriction. For common sense teaches that one cannot pay war taxes as they should be paid — in order to have a first-class war — and buy booze at the same time. At least, not as the Britons have been buying it.

For in 1912 they spent \$807,766,650 for various and sundry drinks, but in 1913 they "blew in" \$833,405,000 for similar purposes. And 1914 was even worse, although no one yet knows officially just how much. The government, however, figures

that it received \$198,250,000 in revenue, as its share of "the swag."

But when it throws away many times this sum, and at the most crucial epoch in English history, it may well contemplate, as through a glass darkly in the dim distance, a national prohibitory law—lasting during the period of the war, at any rate.

France has already—with the endorsement of the Academy of Medicine—abolished the manufacture and sale of absinthe, and has materially curtailed, by precept, plea, and petition, the consumption of alcoholic liquors, cordials, and wines. In fact, it is not outside the bounds of possibility to believe that the European war may yet drive those engaged in it into complete abstention. This, as a matter of internal defense, against an implacable internecine foe.

It would seem, if war is destined to have such a salutary effect upon drunkenness, that it might not be a bad thing to have a little one right here at home, where, in New York City alone, we have a drink bill of \$100,000,000 per year, and are the proud possessors of 1 saloon for every 30 families.

Indeed, the conclusion can hardly be avoided that, with a per capita consumption of 21.98 gallons of intoxicating liquors in the United States

(Government Report of 1912) something worse than a war is happening to American manhood. Representative Hobson states the problem something in this wise, using the figures of the British Government and the English life insurance companies as a basis for his computations.

If a young man at the age of 20 is a total abstainer and remains one, his life prospect is 44 years, and he will live to an average age of 64, but if he is a moderate, regular drinker his prospect of life will be 31 years, and he will live to an average age of 51 — losing 13 years out of his life. If he drinks heavily, his life prospect is 15 years and he will die at the average age of 35 — losing 29 years out of his life.

Conservative estimates place the number of confirmed drunkards in the United States at something over 1,000,000, the heavy drinkers at something over 4,000,000; the temperate, regular drinkers at over 20,000,000.

A soldier wounded in battle and losing 10 years of his life as a consequence, would be classed as seriously wounded. The confirmed drunkards and heavy drinkers together, 5,000,000 in number, must be looked upon as mortally wounded, and the temperate regular drinkers as

seriously wounded, making a total of over 25,000,000 Americans wounded by alcohol today. The estimates for the white race make over 125,000,000 white men today wounded by alcohol, which, it must be conceded, is a right tight little showing.

CHAPTER XIII

EFFICIENCY AND DEFICIENCY

THERE are now more than a million responsible positions in the United States which are closed to the man who uses alcoholic liquors. Not for the purpose of restricting the liberty of the employee, but to protect against waste and accident. From every point of view this ultimately proves to be greatly to the advantage of the employee.

Long since, railroad managers discovered that a source of enormous preventable loss could be traced to the trainman whose brain powers were slightly affected by alcohol. It was not necessary that he should stagger, or that he should indulge while on duty, to make him a source of accidents.

Railroading preceded the laboratory experiments in demonstrating that a much smaller quantity of alcohol than is required to make a man drunk weakens his memory for orders, his power to read

signals quickly, and his ability to act with promptness and accuracy. It was discovered also that the after effects of an evening's debauch do not disappear with recovered ability to talk and walk straight; nor are these katzenjammer trimmings entirely dispelled by a night's sleep. Hence, for the safety of the traveling public, and for the protection of the employees themselves, the railroads generally have come to require total abstinence from all employees holding places of responsibility. Therefore, the familiar slogan "Safety First" is being replaced by the more practical one "Sober First." And with "Sober First," safety is practically assured. As Mr. Edison well says, "There is as much place in business for alcohol as for sand in an engine."

In fact, kings and rulers, business men and corporation heads, social reformers and the Church, are agreed that alcoholic drink works definite and positive harm. And now industry is figuring on this problem: If a single glass of beer lowers a man's efficiency 7%, what is the total loss of efficiency of one who has soaked his system in gin, whiskey, brandy, and other red-hot liquors, and what does this alcoholic saturation cost his employer in dollars and cents?

The answer to this is significant, and it is becoming progressively more so. For everywhere the intelligent minds of the world recognize that alcohol weakens both muscle and mental power, in addition to its detrimental influence on the moral and ethical character. Indeed, Mr. Edward A. Perkins believes that: "As time goes on, the requirements for exact and high-class work by men in the trades is increasing, and they cannot afford to allow their brains to be clouded by the effects of liquor." This is rapidly becoming the conviction of employers of labor generally.

Our government has been stringently criticized by business interests for its position on the liquor question. For the imposition of a United States Tax as a revenue measure has undoubtedly made the United States Government an ipso facto partner in the liquor traffic. Many attempts have been made to break up the alliance between the government and the liquor and brewery interests. If these attempts succeed—which now, as many industrial leaders predict, seems likely in the not distant future—it will be owing to the changing front of our industries toward the alcohol question. It is quite within the bounds of probability that drastic action will soon be taken

to prevent the further swallowing up of profits by alcoholism.

This movement was begun by the railroads as a protective measure. Now it seems certain that every great industry in the country will, within a short time, establish equally stringent rules governing the habits of its employees. Even now drinking spells dismissal for employees of scores of companies, employing thousands of men.

This has led Midas' Criterion, the standard liquor trade magazine, to complain that "One of the most pregnant signs of the times is the steady and increasing tendency for big corporations to encroach on the personal liberty of workmen." And the Brewers' Journal, of December, 1914, echoes plaintively: "There are even companies and individual employers who threaten to discharge employees for drinking alcohol AT ANY TIME. They do not care if that is social and economic slavery. Their main object is to protect their pocketbooks."

Yet during 1914 hundreds of industries have been aligning themselves in the efficiency campaign against "booze." An order was issued by the United States Steel Mills, operating throughout the Mahoning Valley, that in the future promotions

will be made only from the rank and file of those who are abstainers.

The great steel mills of Homestead, Pennsylvania, employing 12,000 men, also declare that a man, by entering a liquor saloon, automatically severs his connection with the company.

Recognizing the loss in efficiency due to drinking, the Philadelphia Quartz Company was prompted to conduct a pledge campaign among its workmen. The men were offered a 10% increase if they would agree, in future, to use no liquor, and to hereafter avoid places where it was sold or dispensed. Ninety-nine per cent made the required promise. The manager of the plant contends it is only common sense to believe that a strictly sober man is worth more to his employers.

Among musicians this same loss of efficiency has been experienced. The members of Sousa's Band and many of the leading orchestras in America are not permitted to drink spirits — not even wine or beer. The reason given is that alcohol impairs the hearing and the accuracy of the sense of melody and harmony, as well as lowers the delicate muscular control required of the lips and fingers.

Recently the Illinois Steel Company, in order to reduce their accident and indemnity losses, installed

in conspicuous places throughout its works electric signs asking this pointed question:

“Did booze ever do you any good — help you get a better job — contribute to the happiness of your family?”

Milk venders now make regular trips through the factory, supplying the men with a beverage better than beer. By an educational campaign, and by taking away one of the incentives to drinking, the Company hopes to reform its drinking workmen. Those who persist in drinking will lose their jobs.

In discussing the effects of abstinence upon industry in Russia, the editor of the *Saturday Evening Post* observes that: “The suppression of the government alcohol monopoly entailed a diminution of 470,000,000 rubles” — roughly half as many dollars — “in the budget of 1914; but the benefits of this suppression are already felt. Though it was feared the calling of so many men to the colors would seriously embarrass industry, it has been found that, thanks to the suppression of the traffic in alcohol, the results of labor are from 30 % to 50 % higher than before.”

In fact, the sentiment of governments and of employers of labor generally, is accurately summed

up in the words of Andrew Carnegie: "There is no use wasting time on any young man who drinks liquor, no matter how exceptional his talents."

And most significant of all, Mr. C. L. Close, manager of the famous Bureau of Safety of the United States Steel Corporation — a gentleman of wide experience in the social and economic aspects of labor — gave it as his opinion that as a result of the combined effort of American industries, the manufacture and sale of liquors and beer will shortly be at an end in this country.

Industry demands energy of men today — also accuracy. In Germany particularly, the great industrials are highly active, and grimly determined in their endeavor to slit John Barleycorn's weasand.

In the great mines and iron works all over Germany and Austria, in steel mills, foundries, gas and electric works, on the Imperial Docks, on surface, subway, and steam railroads; in ship yards, factories, and great contracting enterprises; thousands of booths have been established for the sale of tea, coffee, milk, cocoa, "soft drinks," and "zitrolin" — a manufactured lemonade of wholesome quality. Some idea of the magnitude of the

movement may be recognized when it is known that the sale of innocuous drinks in these booths runs annually into the millions of bottles.

In our own country the substitution of benign beverages for "booze" has met with much favor. This safety device was adopted by Mr. Ralph H. West, President of the West Steel Casting Company, of Cleveland, Ohio, who tells me that he has recently installed refrigerators in which to store milk for his men. Many of these now take their lunch out of doors in the shade, instead of pursuing their original custom of indulging in a mad race for a saloon when the noon whistle blew. The firm supplies ice gratis. A pint of milk costs the men 4 cents.

Some drink not only their noon bottle, but order another for the mid-morning, or one to be drunk in the afternoon, during the heat of casting time. Best of all, the men are finding that milk supplies an invigorating and lasting strength, and they are realizing the immense benefit of this change from "booze" to food.

Also, the big South Works Plant of the Illinois Steel Company recently established a number of milk stations for the purpose of weaning its employees from beer. In less than 6 months these

stations were selling 1400 quarts of milk a day. Fourteen saloons in the immediate neighborhood were forced to go out of business for lack of trade.

In this connection, Mr. E. H. Foote, Treasurer of the Grand Rapids Chair Company, writes me: "It is well understood that a booze-fighter cannot remain with us. . . . We have a milkman who delivers milk in bottles every morning. A boy takes orders from the workmen for the amount they wish, settles with the milkman, and delivers the milk to the employees."

And Mr. F. F. Smith, President of the Osborn Manufacturing Company, informs me that: "Several years ago we installed a coffee urn in our plant, from which we supplied to all employees a large cup of good coffee, with cream and sugar, at \$.22 per month, this being the amount which we find covers the exact cost of material, labor, gas, etc. Our superintendent reports that under this arrangement he knows of but one man in our factory who now visits a saloon at noon."

Mr. George H. Barbour, Vice-President of the Michigan Stove Company, in a very interesting communication, states: "I was told by a gentleman who visited Europe just before the war, in going through some of the largest manufacturing

institutions in England he noticed the absence of beer drinking. The proprietors volunteered the information that the men were not drinking so much as they used to. They found that drinking beer made the men dull and slow-witted, so they sent to Japan and bought a quantity of the very best tea, which at certain hours in the morning they steep and deliver to each man. Many of these men have since entirely abandoned the use of beer. The managers are jubilant over the change in the situation."

Also, there are many firms who are carrying on an educational campaign to help their men to become sober from intelligent choice. The iron and steel industries are putting leaflets in the pay envelopes of their employees, each of which contains some strong argument against the use of alcohol. The railroads also hand these out from their pay cars, and the large posters are put in cabooses each month. This for the protection of men and the public, and the prevention of economic loss.

One significant fact, however, which has been generally overlooked, is the loss incurred by industry in training new men to fill the places of those incapacitated through drink. This was

brought out very interestingly by Mr. Melville W. Mix, President of the Dodge Manufacturing Company, and head of the Manufacturers' Bureau of Industry, in a recent address before the National Committee for Industrial Safety. Mr. Mix said:

"It has been figured that the average cost of apprenticeship, including the cost of bringing a man to the working efficiency necessary to profit, is somewhere around \$1000. If this man is disabled from any cause, the employer must immediately recognize the charge for the cost of training another workman, in addition to whatever damage he may be called upon to pay."

Another loss sustained to industry by alcohol appears in the impairment of skill which may remove the worker from the ranks of the skilled into the ranks of the great horde who have merely muscle power to sell. For into the training of the skilled artisan goes not only his own time and effort, but the labor and expense of the employer who furnishes plant, machinery, tools, and foremen, and who bears the necessary losses while the artisan is being trained in handling the employers' material and machinery.

Industry sustains a further loss as a result of imprisonments for drunkenness. Four out of every

5 men imprisoned for drunkenness in Massachusetts for the year ending September 30, 1913, were between 17 and 50 years of age, and therefore at that very period of life when their industrial output should be greatest. These men lost an aggregate of 300,000 working days, and probably about the same number of days in looking for work after their release from jail.

Mr. E. B. Gaskill, Superintendent of Parsons Pulp and Lumber Company, insists that "careful observation has shown that with a pay-roll of 300 men the actual number of lost days in the month without a saloon in close proximity will amount to 2 days on an average of 24 days' work to a man. With a saloon near by it is conservative to say that the average would drop to 20 days' work in a month, or a loss in average of 4 days per man or 1200 actual days' loss to labor."

The Reo Motor Car Company kept a record of the loss of time after 5 successive pay-days (Wednesdays). In the 10 weeks covered by the record, no fewer than 190 employees lost from half a day to 3 days following their being "paid off." Fifty-six men "celebrated" for 3 days each, which little "jamboree" cost them \$6.75 apiece, or a loss equal to about 25% on their two weeks'

wages. The employer's loss is even heavier, for when one or more men fail to appear, machines and other men must wait until their places can be filled."

Spoiled work is another not inconsiderable part of the loss which drink lays upon industry. In one of the Coatesville Steel Mills, during the period when the saloons were open, it was not at all unusual for from 20 to 40 tons of steel to be spoiled in the rolling following pay-days, thus reducing the earnings of every "piece worker" in the mill, because of the semi-intoxicated condition of some of their fellows. But with the closing of the saloons, this is now ancient history.

The employer must therefore set down in the debit column against alcohol the work spoiled by the unsteady or careless hand, time lost through preventable accident and sickness and alcohol-delayed recovery, the added expense for accident compensation, the total of which debit cannot at present be even estimated in money loss.

Also alcohol, by drugging the brain, clouding the vision, and lowering the ideals, may complicate the adjustment of those delicate mutual problems of the interests arising between employer and employee.

And so the great business interests of America have noted the experiments of the savants and scientists, and have interpreted them in terms of work values. They recognize that what has occurred in the famous universities and psychological laboratories of Europe points losses on a small scale that industry is continually suffering on a large scale.

They have interpreted these epoch-marking experiments of Schnyder, Kraepelin, and other European and American scientists to mean that industry is paying millions of dollars annually in preventable losses by accident, spoiled work, and inefficiency. Translating the experiments of Bergman, Ridge, Mayer, and Kinz into work output, employers are beginning to comprehend that if an office worker takes even a moderate dose of one glass of beer daily, he decreases his efficiency by an average of 7%.

In other words, it requires 15 men, indulging in one glass of beer daily, to do the work which properly should be done by 14 abstainers. They are realizing that a drinking man cannot stand extremes of temperature as well, that he cannot hear or see or smell as well, that he cannot lift as much or lift it as often, that he cannot walk as far, dig as

much, or carry as enduringly as though he were abstinent.

And with what Herbert Spencer would call "altruistic egoism," business is determined that for the mutual interests of workman and employer drinking shall cease.

CHAPTER XIV

WHAT INDUSTRY THINKS OF ALCOHOL

SOME months ago I wrote to heads of insurance companies, industrial corporations, railroads, and colleges; also to safety experts, statisticians, and those who have made a study of efficiency and economics. Of 500 letters sent I received 403 replies. I quote from a few of these, which are representative of the mass opinion. Practically the only voice which did not condemn alcohol in business came from a manufacturer of beer pumps.

Mr. Norman F. Hesseltine, Manager Contractors' Mutual Liability Insurance Company, writes: "Our experience has proved that accidents are caused by drink. An accident which would not incapacitate normal healthy men, disables those whose systems have previously been injured by drink. Excessive drinking seems to run to certain occupations; especially among teamsters and stevedores. . . .

“A significant and interesting case has recently been decided by an arbitration committee of the Industrial Accident Board of Massachusetts: Samuel Archibald, deceased, employee; Edward A. Masfield, employer; Globe Indemnity Company, insurer; (May 20, 1915). The employee was an old alcoholic, who recently had been drinking. It was found that severe injuries caused considerable shock, and led to the development of delirium tremens, which his system favored, resulting in death; that the injuries were the contributing cause of death, and that the widow, being wholly dependent, is entitled to \$4000 in 400 weekly payments of \$10 each. This amounts in substance that an old alcoholic can throw onto the employer and the industrial community the burden of his own debauchery.”

Mr. Francis Norie-Miller, of the General Accident Fire and Life Assurance Corporation, Ltd., writes: “I have come unhesitatingly to the opinion that the effect of alcohol is to degrade in every particular, mentally, morally and physically. Those of my employees who have indulged freely have become absolutely useless. Poverty and misery have resulted. Their children I find weak, physically and mentally, and I feel that not only for the

sake of the present generation, but for the sake of generations to come, every community should have prohibition to the extent that it would be as difficult to obtain strong drink as to obtain strong poisons."

The Aetna Life Insurance Company states: "The regular use of intoxicants in any considerable quantity is bound in time to make a workman undesirable as regards both his liability to cause accident and his efficiency."

The Fidelity and Casualty Company adds: "No man under the influence of alcohol, even slightly, should be permitted to remain in the works, much less to work. Nor should a man whose nerves have been rendered unsteady by the habitual use of alcohol, or by a recent debauch, be permitted to operate dangerous machinery or to carry on dangerous work. He endangers not only his own life, but the lives of others."

Mr. Thomas D. West, Chairman of the West Steel Casting Company and Chairman of the American Foundrymen's Association, says: "I am seeking assistance that would help drive back saloons from manufacturing and industrial establishments. For the past 5 or 6 years I have been going through an experience that has been costly

to our firm, and injurious in creating an appetite for drink with workmen, but have finally ended it by buying the saloon which caused our troubles. This saloon was close to our office and gate entrance. We have paid 4 times the value of the property in order to become proprietors and close it up.

"I know of no greater injury and injustice that can be brought to a manufacturer than by having saloons close enough to be a standing temptation for workmen to steal out and obtain intoxicants. I am urging the American Foundrymen's Association to assist in persuading our State Legislatures to pass laws which will absolutely prohibit the operation of saloons within 500 to 1000 feet of any foundry, mill, or industrial establishment.

"I believe that if a vote of all workmen was taken, 70 % of them would favor keeping saloons well back from workshops, and would prefer the drinking of non-intoxicants during working hours and at lunch time rather than beverages that befog their brains. The readiness to which employees have taken to drinking milk sustains me in this belief."

Mr. D. E. Dempsey, formerly with the New York Central Iron Works, insists that: "Alcohol

is the greatest and most common evil that affects employees — making their services inefficient and expensive to the employers in every line. . . . A large percentage of those that report and remain at work Monday (it is a common custom to report for work and then leave again) utilize nearly one-half their time between the drinking water fountain and the toilet, and after Labor Day or a holiday celebration this condition is extended for several days.

“Accidents on Monday and after holidays were mostly through carelessness caused by ‘big heads.’”

Mr. F. S. Chase, Treasurer of the Chase Rolling Mill Company, Waterbury, Connecticut: “We pay off Wednesday afternoon and for years have noted that Thursday morning shows more absentees, more tardy arrivals, and more inefficient work than on any other day. The work of the habitual drinker is not done so well. He is more likely to suffer accident himself, or to cause accident to others.”

Former United States Senator William A. Clark has written a significant letter from which I quote: “The disqualifications of persons addicted to alcohol were so striking that I peremptorily declined to engage any one upon whom I could discern the effects of indulgence in alcohol. . . .

“I look upon alcoholism as a disease, which in its incipency may not be very serious, and might be thwarted by the exercise of sufficient will — before volition is entirely destroyed and the subject a hopeless wreck.”

Mr. E. H. Weitzel, Manager of the Colorado Fuel and Iron Company, expresses himself in these positive terms: . . . “The officers of our Company have always recognized the injury to employees and to the business incident to the use of alcohol. . . . When all saloons in the coal mining district were closed the efficiency of the workmen greatly increased. The coal production for the first 18 days of April averaged 5.85 tons per day for each miner’s work. This before the Government closed the saloons. During the first 18 days of June (with all saloons closed) each man produced 6.52 tons, which meant an average increase in wages of over 11 % per man.

“I have just made careful analysis of our accidents during January, February and March, 1914, when the saloons were open; and May, June and July, of the same year, when they were closed. For the first 3 months mentioned, the hospital cases due to accidents amounted to 2.79 per 1000 men employed. For the second 3 months they

amounted to 2.01 per 1000 employed. In the case of the minor accidents which were treated at the camps, and not sent to the hospital, in the 3 months under the saloons our accidents of this class amounted to 3.67 per 1000 employed, while under prohibition they amounted to 1.07 per 1000 employed. Our fatal injuries for the 3 months under the saloon amounted to 1.01 per 1000, while under prohibition months they amounted to .8 per 1000.

"This has confirmed the view long held by us, that if saloons and drinking could be eliminated in the coal district, not only the miners, but the companies, would be greatly benefited."

Mr. James Douglas, President of the Phelps, Dodge & Company, Inc., sent me an exhaustive report of conditions in their mines, from which I abstract the following: "We have looked up the matter of accidents of the first 4 months of 1913, 1914 and 1915. In addition to this we made a comparison for the months of April, 1914, and April, 1915, to find out the difference in time lost per 1000 shifts worked.

"In April, 1915, there were $33,135\frac{3}{4}$ shifts worked at the mine. There were 631 shifts laid off, which for every 1000 shifts worked would give 19,043

laid off. In April, 1914, there were 42,663 $\frac{3}{4}$ shifts worked at the mine, and 2619 laid off, which gives 61,387 shifts laid off for each 1000 worked. This means that there was about 3 $\frac{1}{4}$ times as much laying off in 1914, under an alcohol regime, as in 1915, under prohibition."

I am indebted to Mr. Bishop White, Vice-President of the American Chain Company, Inc., for this thoughtful letter: "I am particularly well acquainted with the chain business, but find the worst conditions of all in the Cragley Heath district near Birmingham, England, where excessive drinking makes it absolutely impossible to depend on chain makers. The problem in that district and in that particular trade is recognized as the most serious one which employers have to face. It is chiefly responsible for the loss to Great Britain of the chain business which they, at one time, controlled. This business has gone largely to the Continent.

"We have attempted to discourage drinking in various ways. For instance, we have found the greatest trouble in foundry hands. A molder's work is hard and dirty, and he finishes the day by pouring his molds. The handling of the molten metal results in extreme heat, and the work has

to be done on the run to prevent the metal from cooling. As a result, we have found that molders, almost to a man, go directly from work to a saloon, and are very large consumers of beer. This condition is aggravated by the fact that the work does not attract a very high type of labor, but on the other hand is very well paid.

"We have found one effective deterrent. We furnish in foundries adequate shower baths with plentiful supplies of hot and cold water, soap and towels, and find that very soon the employees get into the habit of coming to work in street clothes, instead of in their working clothes, and the fact that they take a bath and change to their street clothes before leaving the foundry seems to give them the let-down which they doubtless actually require after pouring. As a result, they leave the shop some 20 minutes or half-hour later — have not the time to spend drinking before their dinner hours at home, and do not feel the need of drink. This policy, with no reference of any sort to drinking, is a very satisfactory solution of the problem so far as we are concerned."

Dr. C. A. Lauffer, Medical Director of the Westinghouse Electric and Manufacturing Company, takes the broad view in these matters which

one would look for in a medical man. Dr. Lauffer says: "We have about 15,000 injuries to handle every year. Alcohol is a minor contributing factor, as men under the influence of liquor are discharged and ejected from the plant. Watchmen allow no one to enter who is under the influence of liquor, and men who value their jobs will keep away until they sober up.

"Notwithstanding this, there have been 7 serious accidents, the result of alcohol, which would not have happened had the men been sober.

"To what extent fatigue, with the consequent blunting of perceptions, has been responsible for hundreds more, no man can tell. A sick wife, a bad cook—many things besides alcohol will dull the faculties, and diminish that reserve of self defense that subconsciously protects a man in dangerous situations against accident."

Dr. Lauffer also furnished a report from fourteen industrial surgeons, who met to discuss the standardization of first-aid treatment. These whose professional lives are dedicated to the men, furtherance of the principles of "Safety First," represent corporations employing nearly a million men. They conclude that "the fatigue of the-day-after-the-night-before is back of the justifiable

hostility of industry to the indiscriminate sale of alcohol."

Mr. J. B. Mansfield, Vice-President of the J. E. Bolles Iron and Wire Works, says: "We have overcome the 'Monday morning nightmare' by paying our men on Tuesday instead of Saturday. . . .

"Forty per cent of our accidents are among men who take intoxicating liquor. Ninety per cent of serious accidents occur among men who drink. Not a single serious accident has happened to an employee who was a total abstainer since our Compensation Law went into effect. We now discharge and refuse recommendation to an employee who comes to work Monday morning smelling of whiskey."

Mr. C. B. Calder, Vice-President of the Toledo Shipbuilding Company, communicates: "When the Pittsburgh Steamship Company's ships were built by J. D. Rockefeller and managed by L. M. Bowers, he enforced restrictions against all use of alcohol. When I took charge of the Dry Dock Engineer Works I found that the men were in the habit of sending apprentice boys out during working hours for a pail of beer. This was peremptorily stopped, and now it is but rarely indeed

that a workman has his pay garnisheed, an embarrassment which was formerly very common."

Mr. Z. Clark Thwing, Vice-President of the Grand Rapids Veneer Works, calls it "That industrial vampire, alcohol." He says: "We simply will not employ a man in any capacity that is even moderately intemperate, because under our State Workmen's Compensation Act, the financial risk is too great. . . . The extension of the Compensation Laws throughout the country will, from a purely business standpoint, do more for the cause of temperance than is now generally supposed."

Mr. W. Boardman Reed, Consulting Engineer, declares: "I cannot see why there should be any difference in opinion as to the effect of alcohol upon the human system, and there certainly is not among employers of labor.

"While it is true that the human system can doubtless absorb a certain amount of alcohol, as it can almost any other poison without an apparent effect as to efficiency, it is simply a question as to the amount that is used and the ability of each particular person to absorb as to whether his efficiency is affected or not."

Mr. F. C. Kelley, Superintendent of the Knoxville Railway and Light Company, writes: "When

first I was employed by this Company a man was never questioned concerning his habits, so long as he did not get drunk on the job. Even when he did, it was very often passed up without mention, especially if he did not do anything reprehensible.

"I found that these men spent at least 30 % of their earnings for drink, which would cause them to lose at least 10 % of their time. They did not make efficient workmen, they did not advance in their work, nor were they nearly so reliable as abstinent men. . . . A man in the service now has to answer for drunkenness, whether on or off duty, and up to the present date, I cannot recall a single accident caused by intoxication, since this rule was put into effect."

Mr. C. Edwin Michael, President of the Virginia Bridge and Iron Company, advises me that, in his opinion, "The use of alcoholic beverages is a pure economic waste." Also he observes that: "There are many cases of death from 'sunstroke' occurring among our employees in heated weather, which may undoubtedly be attributed to the excessive use of alcoholic drink. I have also observed the usual increase of Monday morning accidents due in great measure to the nervous condition following alcoholic debauch."

Mr. E. C. Spear, Treasurer of the Cheney Bigelow Wire Works, argues that: "There is not the slightest question as to the effect of alcohol on working men, or any one else, for that matter. It cannot be anything but detrimental to the man, or to the people for whom he is working."

Mr. Geo. T. Fonda, Safety Engineer of the Bethlehem Steel Company, holds: "Regulation of the use of alcohol in the industries in general, will soon become a matter of serious consideration on the part of manufacturers in this country."

Mr. Henry R. Towne, Chairman of the Yale & Towne Manufacturing Company, informs me that when alcohol was first interdicted in his plant his men rebelled and refused to work. After accepting conditions, however, most, if not all, of the workmen admit that enforced abstinence has been beneficial to them, and "they were glad it had been insisted upon."

Mr. Howell Cheney, of Cheney Brothers Silk Manufacturing Company, says: "Unquestionably employees themselves realize the evils of intemperance, for our men will not admit to their Benefit Association those who are known to be habitual drinkers, nor will they pay benefits for sickness caused or increased by drinking."

Mr. H. E. Bullock, President of the Illinois Malleable Iron Company, says: "On the days succeeding our pay days our molders do not put up as large heats, and the percentage of scrap increases. With men in higher positions we are insisting on sobriety. Latterly have been having many of them take the Normyl temperance cure. I would be glad if your book shows some way of securing temperance among teamsters. Almost invariably these seem to be drinkers."

Mr. S. P. Bush, President of the Buckeye Steel Castings Company, concludes that: "Fully one-half and probably more of the cases that have come under my observation where men have become inefficient or in a condition of distress has been the result of drink. The use of stimulants lowers the vitality and enormously reduces efficiency."

Mr. Fred J. Miller, Manager of Factories of the Remington Typewriter Company, comments that: "Business men, members of clubs, etc., are now drinking much more than are working men, and more of these are lessening their efficiency by drinking."

Mr. L. H. Ranney, Secretary of the International Harvester Company, states: "We permit no employee to remain in the service whose work is in any way affected by intoxicants." He empha-

sizes this from their Book of Rules: "Rule 7. If you are tired it is rest that you need. Avoid whiskey and other intoxicating drinks; they weaken both mind and body. If you need a stimulant try hot coffee"

Mr. F. K. Copeland, President Sullivan Machinery Company, writes: "Whenever we know of a man who is intemperate, we refuse to employ him. This has become absolutely necessary under the Compensation Laws. I believe these laws are just and reasonable, and that Compensation is a proper charge against our product; but in return for this outlay we expect our men to be in full possession of their faculties, both for their own safety and the safety of their fellow workmen."

Mr. Walter S. Bickley, President of the Penn Steel Castings and Machine Company, concludes that: "It is the lowest paid workman who finds time and money enough to remain away after pay day."

Mr. J. T. Jewett, Jr., President of the Standard Pulley Company, says: "We always have considerable trouble Mondays because of men who do not show up for work at all, or if they do are unfit for work on account of having 'a Monday morning hold-over.'"

Mr. M. L. Pulcher, Vice-President Federal Motor Truck Company, writes: "I attended a luncheon the other noon where there were twelve automobile men at one table, and not a single drink was served. It was remarked by one of the men present that the change in regard to liquor had been very great — some 4 or 5 years ago there would have been a drink before every plate. . . . Indeed, I am greatly in favor of a restrictive movement. Not prohibition, for I have lived in counties that were under local option, and there was more booze consumed then than when the saloons were open. The type of prohibition I favor is National Prohibition — no booze of any kind made, sold or delivered."

Mr. H. E. Miles, President, Trade Board of Industrial Education of Wisconsin, has written a most interesting letter, from which I extract the following: "A man seeking employment showed me recommendations from several large brewing establishments. Noticing my hesitation, he said: 'While I have worked in breweries, I have never drunk. Drinking, you know, is prohibited in breweries.' 'Why?' I exclaimed, 'I understood that working men in breweries commonly receive their daily stint.' 'Yes,' he said, 'but not the

office men. While the manufacturers make booze, they don't permit any of it in their books or business.”

Mr. S. W. Otley, Vice-President of the Detroit Steel Casting Company, says: “Our practice has been to pay twice a month — on the 10th and 25th. We have recently issued an order changing pay day to the Saturdays nearest the 10th and 25th. We did this because there was so much drunkenness following pay day that our force was disorganized and our work was demoralized.”

It is evident that the employment of women simplifies the industrial problem in more ways than one. For Mr. William Dow, of the H. J. Heinze Company, believes that: “Our general manufacturing help is so extensively made up of women that we have very much less difficulty on account of alcoholism than would most other concerns.”

And this opinion is shared by Mr. E. L. Hartpence, of the Acme Wire Company; Mr. H. F. Hurd, of the Peabody-Cluett Company, and a number of others who have kindly answered my inquiries.

The attitude of the railways concerning alcohol is tersely and emphatically put in a communication from Mr. W. S. Stone, Grand Chief of the Brother-

hood of Locomotive Engineers, who states: "We have no data upon the experience of the organization which would help you, for the reason that our organization does not permit members to remain members who indulge in the use of intoxicating liquors: In fact, the rule of nearly all railroads, commonly known as Rule G, prohibits the taking of a single drink, either on or off duty, and men are discharged for frequenting places in which liquor is sold."

Mr. J. W. Lee, Jr., of the Pennsylvania Railroad Company, tells me: "The Pennsylvania has but one rule on this subject of intoxicating liquors, which says: 'The use of intoxicants by employees while on duty is prohibited. Their habitual use or the frequenting of places where they are sold is sufficient cause for dismissal.'"

Mr. J. J. Sullivan, President of The American Railways Company, writes: "We consider the risk of an accident caused by the negligence of one given to the drink habit so great that our rules — which are made for the best interest of the public — are strictly enforced. We know that efficiency is reduced by alcoholic indulgence."

This sentiment is echoed by many other prominent railroad officials.

Mr. M. C. Brush, Second Vice-President of the Boston Elevated Railroad Company, says that it is gratifying to note that even in the Union of the railroad's employees, special attention is called to the personal responsibility of employees in the avoidance of accidents, and their observance of the rule prohibiting the use of liquor is urged.

Mr. J. M. Davis, General Manager of the Cincinnati, Hamilton & Dayton Railway Company, in concluding a generous letter of appreciation, says: "I personally believe there is more sobriety among railroad men as a class, when the number of employees is considered, than in any other business." This sentiment is echoed by an official, high in the service of the Boston & Maine Railroad.

Some expression of opinion for or against the effects of prohibition may be of interest here. Mr. James Bowron, President of the Gulf States Steel Company, writes: "Our record with the accident insurance companies is so extremely good that it has been frequently commented upon, and our staff is disposed to regard the low accident rate as measurably due to our freedom from drunken and tipsy workmen.

"Looking at the matter from an entirely different

angle, I may say that I am also Vice-President of the Bessemer Coal, Iron and Land Company. Prohibition was voted in this county (Birmingham, Alabama) on the same day in October, 1907, that the height of a panic was arrived at by the suspension of the Knickerbocker Trust Company and the adoption of clearing house regulations restricting all drawing on private accounts to \$100 at any one time. This is a mining and manufacturing community, and more than half the blast furnaces in the district shut down, throwing thousands of miners out of work.

“The Bessemer Company had, for two or three years previous to the panic, been selling large numbers of lots to the miners on the instalment plan, payments running over 10 years. Notwithstanding the panic and the number of men out of employment, instalment payments were better met under a condition of panic plus prohibition than they had been with high wages, full work plus liquor. This showed in a remarkable way the greater efficiency of sober men in the matter of wage earning.

“A real estate firm told me that their experience in collecting rents was similar: Namely, that under panic plus prohibition they collected their rents

vastly better than under the condition of luxury plus liquor."

Mr. Bowron's experience is paralleled by that of Mr. H. G. Prout, President of the Hall Switch and Signal Company: "For 11 years I was in charge of the shops of the Union Switch and Signal Company in Pennsylvania. These shops are located in Swissvale, Edgewood and Wilkinsburg — all prohibition boroughs. I went into that situation strongly opposed to prohibition. I came out feeling that whatever injustice might be done to individuals or vested interests by sweeping prohibition laws, the gain to communities and to the nation would more than compensate for such injustice.

"It was my observation that our work people living in these prohibition boroughs were an uncommonly reliable, self-respecting set of citizens. They were thrifty, and an important percentage of them owned their homes."

Mr. T. I. Stephenson, President of the Knoxville Iron Company, and many other executives expressed themselves in similar terms concerning the effect of prohibition. I merely quote the above as typical examples. However, the shield also has a reverse side.

Mr. G. F. Meehan, of the Ross-Meehan Foundry Company, Chattanooga, Tenn., says: "This state has had a prohibition law for several years past, and, in our opinion, this has served to cause more drunkenness than we had previous to the passage of this law, especially during the period when there was a strict regulation of the saloons."

The President of a prominent New England railroad says: "In my experience with other corporations I have had as many as 30,000 men under me at one time. The lines of these roads ran through 4 states. In none of these was there prohibition. Yet I had less trouble in 5 years there than I have had in this, the oldest prohibition state in the Union, in one year with about 2,000 men. In other words, my experience has been that prohibition does not prohibit, and that the drinking habit is far worse in prohibition states than it is anywhere else."

Yet whether prohibition prohibits or not, the general opinion of industry concerning alcohol may be summed up in the statement of Mr. A. J. Thornley, Manager of the Narragansett Machine Company, who says: "We do not know anything about the scientific side of the bad effects of alcohol on the human system. Our experience,

however, in dealing with it from the industrial side makes us ready to believe the worst thing that can be said against it. Its use means inefficiency, greater liability to accident, to insubordination, to disorganization. We have proved this so thoroughly to our own satisfaction that the most important rule in our plant is to the effect that: 'No drinking man need apply.'"

CHAPTER XV

OLD JOHN B. AND THE COLLEGE MAN

IT is deeply to be regretted that the follies and stupidities of the German Universities are aped in many of our American colleges. In the club rooms, and at Alumni reunions, it is common to drink immoderately of beer drawn from the keg, after the custom of the German schools — and many a large head and “dark brown taste” follows the morning after the night before.

The most regrettable feature of this lies in the example. For, if the cultured and supposedly educated youth of America find recreation in social drinking, what reason, argue the unsophisticated, is there for assuming that that way lies death or life-shortening?

Subsequent humiliation for their beery past will not mitigate the pathological consequences of methodical orgies. Though a sinner reform and become a veritable saint, he will nevertheless be a limping, halting saint.

In fact, the immature undergraduate attitude on this most momentous medical, social, and economic problem of modern times was clearly evident from the enthusiastic reception of a parody entitled "It's a Dull Way to Prohibition," sung by two members of the Class of 1917 at a recent Harvard Union banquet.

The song burlesqued the undergraduate attempts to make the Sophomore class "dry." And as I write this, the youngest class at Harvard has clambered up and onto the Beer Wagon, and with loosened rein is scampering merrily after its Sophomore brethren who, by a three to one majority, recently voted for that first-aid to nervous stupidity, the foaming beaker. Which helps to prove that the average college man is an academician — hopelessly archaic in point of scientific knowledge and sapiently certain of his own cock-surance.

For, with students particularly, the action of alcohol and special intellectual and nervous strain operate frequently to bring about very obstinate nervous troubles. There are many more breakdowns from beer than from books.

This fact is recognized by the scholarly men who have charge of the United States Army and

Navy Schools. These have absolutely forbidden the use of all alcoholic liquors, including beer, to their bright young students in the art of scientific assassination.

These objections are shared by the majority of our university heads. Their general attitude toward alcohol is ably summed up in a letter from Dr. Howard McClenahan, Dean of Princeton University, who says: "We regard drinking as harmful, especially for young men, and we therefore are making every effort to discourage and prevent it. We forbid absolutely the keeping or drinking of alcoholic liquors in college buildings or dormitories. We forbid also the frequenting of saloons and drinking places. In addition, the University conducts a course of education upon the influence of drink."

Dr. Charles W. Eliot, President Emeritus of Harvard University, writes me that "My observation among students of Harvard University during the last 65 years is that the use of alcohol among them has very much diminished, — particularly during the last 25 years. This improvement has been the result of voluntary action altogether. Locally in Cambridge the absence of saloons has been of advantage. So far as I am able to

judge, the recent physiological demonstrations, that alcoholic drinks diminish efficiency in all occupations, have not yet had much effect on the educated class; but, as these demonstrations become known, I cannot but think that they will reënforce the general tendency towards temperance.

“For myself, I can perhaps best put my conclusions about the use of alcohol in the following way:—If I were to begin life over again, I would start as a total abstainer from alcoholic drinks, and would not offer them to friends or guests in my house. This conclusion is based on the conviction that alcoholism is the greatest evil which afflicts the white race,—first, because of its own effects, and secondly, because it induces or promotes other grave evils.”

Dr. Eliot’s hopeful attitude concerning the future relations of alcohol and education is shared by Roger I. Lee, M.D., Professor of Hygiene of Harvard University, who answers my communication addressed to President Lowell by saying: “There has been a striking decrease in the use of alcohol among the students during the past few years. This decrease seems to be a part of the general appreciation of the effects of alcohol. So

far as can be determined, this decrease is continuous." Which affords much consolation to those among us who would like to see deficiency replaced by efficiency.

Dr. Arthur Hadley, President of Yale University, raises a most interesting and unique question in a communication in which he says: "In looking up the records of the University Club I was greatly impressed with the fact that ginger ale was much more used than any other beverage; and from the information given by the encyclopedia as to the percentages of alcohol in ginger ale, beer, and stronger drinks, I was convinced that most of the alcohol consumed by the students was taken in this form."

There is a scarcity of American statistics on the subject of ginger ale and "temperance" drinks, but an investigator has told us something of conditions in Canada, and there is no reason to believe that they differ materially among us.

We learn that out of 14 samples of ginger beer analyzed 3 were strongly impregnated with alcohol, while another so-called temperance beer contained enough proof spirit to send some people home talking to themselves. In Kingston one could buy for 10 cents enough beer containing 2.86% of

alcohol, to start a riot. In Winnipeg ginger beer was found which contained 4.71% of alcohol. The enthusiastic temperance advocate might on this suffer all the horrible effects of katzenjammer and "morning after" repentance which would normally accrue to him as a result of saturating his system with the ordinary domestic or garden variety of beer.

And also do not forget that cider — the "temperance" drink of many college men who profess an undisguised horror for alcohol — is decidedly alcoholic. For, while it is sweet and harmless — for a few days — alcoholic fermentation is quickly established. And than a "hard" cider "jag" there is nothing jaggier or more insidious in developing an alcoholic craving — as many a chronic drunkard can testify.

Briefly, the opinion of college heads concerning alcohol is summed up in a letter from Dr. David Starr Jordan, President of Stanford University, who says:

"My experience with alcohol in relation to students is that a boy that is convivially inclined is not likely to do any very good work in the University. We have for the last 6 or 7 years practically excluded all students who visit saloons.

The influence of alcohol is always to dissolve the restraints and reserves which we call character building, and that is true in the physical as well as in the moral sense. I am convinced that alcohol and accuracy do not go together."

CHAPTER XVI

WHAT IT COSTS AND WHAT IT'S WORTH

THE widespread use of alcoholic beverages has been conservatively estimated as causing the loss of 21% in the efficiency of the nation's workers. The production of wealth is reckoned at about \$32,000,000,000 yearly; the loss due to deficiency (or diminished efficiency) in round numbers is therefore fully \$8,500,000,000. The total cost of the Great War in Europe for the first year was \$15,000,000,000.

Mr. Bryan estimates, after careful statistical study of the alcohol question, that the United States spends annually almost \$2,500,000,000 for intoxicating liquors.

In a speech, made March 15, 1915, he said:

"The annual appropriations of the Federal Government are little less than \$1,250,000,000. Think of this nation spending twice that amount for alcoholic liquors.

"The cost of the Panama Canal was about

\$400,000,000. Is it not appalling to think we spend for drink every year 6 times the cost of the Panama Canal?

"It is estimated that we spend \$750,000,000 annually for education. And yet we spend for drink more than 3 times this amount.

"The nation submits to this taxation, which is 5 times as great as any taxation it would permit any political party to levy."

Or consider it from this angle: America's fire loss is far greater than that of any other nation. As a result of our foolish and wasteful use of wood for building material, we burn a house down on an average of every 10 minutes, and the houses thus destroyed during a year, if placed side by side, would stretch in an unbroken avenue of desolation from New York to Chicago. Yet the financial loss from fire, according to a recent report by the head of the New York City Fire Department, is only \$2.68 per capita, a mere fraction of what drink costs.

Dr. Hopkins, whose "Wealth and Waste" is a text book on the economics of the alcohol question in over 400 colleges, has this to say concerning the economic relations of alcohol and industry.

"Much less than \$250,000,000 a year is the

national revenue of this country from liquor drunk; the cost of which to the drinkers is not less than \$2,500,000,000; its cost to the people is vastly more; and the people's loss on account of it is at least \$5,000,000,000 a year."

Each 12 months the 10,000,000 or more drinkers in the United States pay over liquor bars more money than the total of all the gold and silver mined and minted in this country in 40 years.

Every 10 months the loss and waste resulting from the liquor traffic in this country is greater than all the gold produced in America since the discovery of gold in California to the present time. For since 1848 (when gold was first discovered) California has not produced sufficient of the auriferous metal up to 1899, to pay for the liquor and beer drunk in America for 16 months, — to say nothing of the loss and waste caused by this drinking.

Since the discovery of America the entire silver and gold production of the world would not make up a total of \$20,480,748,600, the drink bill of this country for 20 years.

Every 9 months our contribution to John Barleycorn exceeds all the capital of all the national banks of the United States. In other words, we

are paying him more money than the whole circulating medium of the nation — gold, silver, and paper combined.

Or attempt to visualize it in this way: Remembering that the Washington Monument is 550 feet high, if the dollars spent for alcoholic drinks were piled in a monument a foot square, it would make a memorial to Old John Barleycorn 67 miles high, 670 times the height of the Washington Monument.

Yet the money paid for drink is, by far, the least significant part of the heavy tribute levied by this emperor of drugs — Alcohol. His toll of death, disease, degeneracy, and degradation is still further supplemented by his influence in causing crime, pauperism, prostitution, venereal disease, and divorce.

Prisoners in the Eastern Pennsylvania Penitentiary — in a petition signed by 1008 of their 1478 total, praying the Legislature to abolish the manufacture and sale of liquors — ascribed 70 % of all crime to its use. This was based on personal canvass of the inmates.

Some 1200 convicts in the Illinois States Prison at Joliet were preparing a similar petition to the Legislature of that State, when, for some esoteric

reason, it was forbidden by the warden. But from many prisons and penitentiaries in the nation, and through many prison publications, the states and nation are being called upon to prohibit the manufacture and sale of alcohol, to which from 50% to 90% of the convicts attribute their downfall.

The most reliable figures agree that at least 75% of all pauperism must be credited to John Barleycorn's account. Drink leads to poverty as inevitably as the drink habit leads to idleness. Every drinking man loses an ever-increasing amount of time from his work, while he develops for this work an ever-growing disinclination, and loses in his occupation an ever-increasing degree of skill.

Also, it is conservatively estimated that 40% of sexual immorality is caused by drink. Indeed, as a result of inquiries and investigations in hundreds of penitentiaries, reformatories, work-houses, and hospitals, many are inclined to place the rate much higher. But 4 out of 10 is a disgraceful enough tally, even for John Barleycorn.

According to the statistics of Professor Forel, who probably knows more about the subject than any living man, approximately 75% of venereal disease is contracted by men under the influence of

alcohol — chiefly by persons slightly intoxicated, and rendered more excitable and irresponsible thereby. The suffering, the misery, the heartaches, and the broken homes that this entails is incalculable.

In discussing this subject Professor T. G. Masaryk, of the University of Prague, said: "Drink damages the relations of man to woman. These are coarsened and degraded. The old Austrian saying is that when Bacchus fires, Venus sits behind the stove. Modern investigation indubitably teaches that drinking corrupts the sex life of our day. Alcoholism and prostitution are the chief factors in the degeneration of nations."

And, it might be added, of divorce. For, according to the Census Bureau, 1 divorce in every 5 has intemperance as a cause. From 1889 to 1906 there were 184,396 divorces due to intemperance on the part of husband or wife.

Those who make money out of the rum traffic exclaim: "We give employment to thousands. Incalculable wealth would be lost if we shut up shop. Numberless men would be thrown out of employment — possibly to swell the long file of the bread line."

The Booze Barons point with horror to the

gigantic sums of money removed from productive activity, to empty warehouses and stores, workless cooper shops, bottle and glass factories, insolvent railroads — and perhaps even to a bankrupt government — if rum is banished.

Which is equivalent to saying that no money withdrawn from anything connected with the liquor business would, or could, ever be profitably reinvested. Or that the million and one splendid enterprises — many of which now languish and die for want of a little capital — would refuse to accept money that had ever been corrupted in the liquor traffic.

These may have been good arguments in those days before the deadly multiplication table became common even to school boys; before we understood conservation of forces; and before we knew that the light of the candle, when it was blown out, remained right where it was — in the form of potential energy.

Now we know that the highest proportionate amount paid in wages in any industry is 88%. This is for the construction and repair of steam railroad cars. The proportionate amount paid as wages in the manufacture of malt liquors is only 20.2%, that paid for wages in manufacturing

patent medicines 15.5 %, and that portion doled out to those who manufacture distilled liquors is less than 2 %.

We also know that the capital invested in the liquor traffic, based on the figures of 1912, was \$771,516,000. This capital employed but 62,920 workers — approximately 81 to every \$1,000,000. If employed in textile manufacturing, this same investment would have paid wages to over 445,000 workers — more than 7 times as many as altogether are employed in the manufacture and distribution of malt and spirituous liquors. Or, taking the 5 great groups of legitimate industry, and averaging their employment of labor, the \$771,000,000 of liquor capital would employ at least 5 times the number of workmen that derive a living through liquor.

So the drinking man maintains the Drink Industry — and nothing else. And the Drink Industry, as we have seen, employs fewer men to the million of capital than any other leading manufacturing interest.

CHAPTER XVII

BREAKING THE ALCOHOL SHACKLES

THERE is a cure for every drunkard in the world. For every excessivist, no matter how drink-drenched, how sodden, how hopeless-seeming; no matter how degraded, how soul-seared; no matter what his heredity, his environment, his economic condition; no matter the number of times he has mumbled — with parched, quivering lips, the rosary of his black beads of misery and self-debasement, or tried to pluck the climbing sorrow from the wall of his heart of hearts — somewhere, somehow, by some means — medical or psychical — there is a cure for him.

The veriest slave, the most debased bondsman of that mocking master that makes a dullard — no, an imbecile — of the world, under wise and skillful care can tear loose from the tentacles of that ferocious polyp that is dragging him to slimy death; he can be saved from this demon who is piping him into the caverns of Hell.

Yet there is no rose-strewn, lightsome road to

abstinence. For the most important necessity for reform is willingness to be reformed, and unless he is willing to make some sacrifice and "stand the gaff" with patience and courage for a while, no drinker can be cured.

Remember also that the remaking of a man is not the work of a day nor a week — perhaps not of a year. It may require time, and the liberal expenditure of soul-strength before the guerdon is finally won. After having been daily dosed in every drink with apomorphine, or some other emetic base of many "whiskey-cures," one can be sickened to absolute loathing for alcohol. But unless temptation is resisted when the desire returns, as it frequently does, again and again, no cure can be permanent.

Nothing which can be "dropped into the coffee," administered in the food, or introduced into the system in any secret way is of the slightest avail in the cure of drunkenness. There is absolutely no treatment that can be given "without the patient's knowledge," that is of the slightest value. For coöperation is required, the physical system must be tuned up, and the alcohol sickness cured — so that later the victim may refrain from drink, or have the moral courage to flee temptation.

It is unfortunate that there is not something that secretly could be given that would arouse the dormant man, and kill the alcoholic craving within him, but such does not exist — all the quacks in Christendom to the contrary notwithstanding. There is nothing that will compel a man, against his will, to quit the use of alcohol. He may be “doped” until he will vomit at the very sight — let alone smell — of liquor. But so soon as he can get alcohol without emetics, and is able to keep it down — which he will be after a trial or two — he knows that he is not cured, and nobody can convince him that he is.

Every drunkard is a sick man. His tissues are poisoned, his cells are loaded with under-oxydized material, his elimination is imperfect, his nerves have “gone to smash.” His circulatory system is affected, and his digestive apparatus is sub-normal.

Assimilation and metabolism are perceptibly “slowed up” — perceptibly to the trained eye of an expert — and even normal muscle tone is lowered. In short, though he may not know it, the drunkard is a very sick man, and he must be brought to a better condition of health before he can ban from his system the devil of alcoholic desire.

All medical means of curing inebriety, it is needless to say, should be entrusted to wise and experienced supervision. The firm restraint and salutary restrictions of the hospital or sanitarium are almost indispensable. A drug patient always "does better" among strangers than among relatives or friends whom he can wheedle, cajole, or brow-beat at will. Therefore, a most important adjunct in the cure of inebriety is a gentle, mild-mannered nurse who invariably has her own way.

That radical and very effective treatment for drug addiction and inebriety, originated by Mr. C. B. Townes, of New York, and described by Dr. Alexander Lambert, has been most successfully employed in thousands of desperate cases of alcoholism, and has high endorsement. It is not adapted to all cases — particularly where grave debility exists, but the man who really desires to be free is freed from his habit — provided that he can be made to realize that he is mentally a trifle unpoised, and that his nervous system is, for a time, unstable, and not fitted to withstand the strain and stress of hard work and worry.

This treatment, it goes without saying, must be administered under the guidance of a competent

physician. Briefly, Towne and Lambert claim that it is impossible, unless by some miracle of grace, to cure a victim of alcohol while the physical effects of the drug he is using are with him, constantly and insidiously undoing the work of rejuvenation. Therefore, they first secure a thorough elimination of the accumulated poison. This is accomplished by giving the patient generous doses of compound cathartic pills and "blue-mass," followed by a vigorous saline laxative.

This leaves the patient a "little the worse for wear," but free from alcohol craving. For his alcoholized protoplasm has been scoured clean. It is then "up to him" to keep it clean.

Also, he must be brought to the highest pitch of physical efficiency, by rest, exercise, diet, and a judicious use of tonics. This may require 3 weeks or a month — and if physical improvement can be effected, the exhausted and debilitated condition will not tempt to that dangerous "nibbling" and flirting with the old enemy that has proved the undoing of thousands.

For the excessivist, there is no safe middle course. There is no compromise. No one who has ever been an addict can touch alcohol, without the gravest danger of a complete relapse. The first

drink — even the tiniest — may start up all the old craving. Alcohol and the nervous system of one who has been addicted to it are incompatible, for alcohol unites with the brain and nerve fat to form poisonous combinations, which prevent the normal reaction of the brain cells.

So no confirmed alcoholic can hope ever again to drink “in moderation.” He may hold this faint hope, against everything that is told him, but if he yields to the temptation to again try, he is undone. The attempts to nibble have caused the relapse of thousands, who, had they been content to “let well enough alone,” would have remained cured.

Another remedy, which at first, because of its secret composition, I hesitated to endorse, is Normyl. Yet Dr. F. D. Essen, and other physicians of New York, have had extraordinarily successful experiences with it. Also the Normyl Association is practically a philanthropy.

Physicians who have used Normyl declare that it has not the slightest deleterious effect, can be taken without detention from work, or without resorting to sanitarium confinement, and cures every case that will coöperate toward being and remaining cured.

In the sanitarium which the Normyl Association

has established in New York, several hundred cures of alcohol and morphine addiction have been effected, complete failures averaging considerably under 10 %.

Dr. Essen assures me that, if an habitué really desires to be rid of this habit (and the remedy is even more successful in morphine and other narcotic addictions than it is with alcoholism) in every instance a cure will follow.

All desire for drink vanishes with practically the first dose, and it is claimed that the suffering resulting from the withdrawal of the alcohol or opium is negligible.

Many individuals, without apparent rhyme or reason, periodically "go off" on "sprees." Their cycle may be a week, or it may be a year or more, but they are as regular in this debauchery as is the precession of the equinoxes.

While this periodic narcotic craving may be a form of mental disease — a symptom of a degeneration which may ultimately result in a complete nervous and mental breakdown — it is quite certain that a most important cause for spreeds has been overlooked.

This cause is chronic nicotine poisoning — more particularly affecting cigarette smokers, or pipe or

cigar smokers who "inhale." For those addicted to sprees are, in a very large majority of instances, either cigarette smokers or heavy users of tobacco.

The explanation is that these patients smoke themselves beyond the sedative stage and into a state of nervousness, then increase their smoking, in a vain attempt to gain sedation. Finally they become so nervous through tobacco excesses that they require a narcotic to quiet them, when they turn to our friend, John Barleycorn.

Their jaded and harassed systems are exceedingly intolerant to alcohol, for, after the first few drinks they are mentally "over the way." They then decide that they might as well be drunk as be the way they are, so go to the full spree.

However, if one honestly desires to quit the use of tobacco the cure is comparatively simple. A mouth wash and gargle composed of

One dram of silver nitrate,
30 grains of pulverized alum,
2 drams hydrogen dioxide, and
1 pint of distilled water

will do the work.

Use a small quantity whenever the desire to smoke or chew manifests itself. It is absolutely

harmless, even on continued use — provided of course that it be not swallowed. If this mixture is used faithfully, the attempts to use tobacco will be followed by a most emphatic nausea. Get rid of the tobacco habit if you would get rid of the alcohol habit, for they fit together and complement one another like the tactile fingers and thumb of a pick-pocket.

The more sugar one eats the less alcohol he drinks. If one's sugar appetite be kept satisfied he is quite unlikely to develop an alcohol appetite. Dr. Andreas F. Christian, of Boston, who has been conducting an exhaustive research into the cause and remedy for the liquor habit, concludes that the richest of ice cream and an abundance of the finest chocolates are the best and surest cure for alcoholism.

Dr. B. L. Spitzig, of Cleveland, suggests a similar treatment. He finds that in alcoholism there is most generally a positive aversion for sugar. As the supply of alcohol is increased the desire for sugars is correspondingly diminished, until a time when alcohol is taken in preference to carbohydrates.

This characteristic in the chronic alcoholic is quite general. He rarely uses sugar in coffee, and

cares little for pastry and starchy products. Stimulating food, rich in condiments, is his mainstay, and his appetite for stimulating drinks is thereby increased. In consequence the body receives a minimum of sugar, and becomes accustomed to more alcohol, which replaces the sugar.

Therefore, in beginning treatment the diet is modified to contain an abundance of sugar. Cereals with cane sugar, sweet fruits, pastries, chocolates, and ice cream are given. In some instances, owing to a distaste for sugars, Dr. Spitzig suggests that the change should be gradual, to prevent rebellion. In such cases lactose is used, a dram every two hours, given in the form of a medicinal powder, to encourage the psychic effect.

Later, as the demand for alcohol is palliated, ordinary sugars are taken with avidity. During the entire treatment elimination is increased by every known means; hot drinks, sweat baths, purgatives, etc. The sugars are gradually reduced as the patient resumes a normal condition.

The weaning from alcohol is accomplished by the substitution of highly sugared liquors, which are rapidly reduced in quantity. Toddies, juleps, and sweet wines yield the best results. Sweetened liquor relieves excessive craving in from 1 to

4 weeks. The average alcoholic omits alcohol after from 3 to 5 days, but a premature withdrawal is to be avoided.

Also, it is well known that rarely is there found a drunkard who is fond of apples. In fact, it is definitely proven that apples are an antidote for the alcoholic craving. They create a distaste for whiskey, and after one has eaten an apple he cannot relish — and frequently cannot take with any degree of comfort — a drink of liquor.

Therefore a large organization of serious-minded women of Chicago have just completed arrangements for a campaign in which they will fight whiskey drinking with apples. They are confident that the agent which is popularly believed to have caused the fall of the human race may now regenerate a portion of it. With this organization of women as close observers, Dr. Samuel Bailey, of Iowa, has been experimenting on the anti-rum qualities of apples. During his experiments Dr. Bailey has cured several hundred drunkards by feeding them apples when they wanted a drink.

Dr. Samuel McComb of the Emanuel Church in Boston, has inaugurated a movement which has met with splendid success among drunkards. Combining the influence of prayer and mental

suggestion the Doctor has succeeded in breaking the shackles from scores of most debauched alcoholics. His practice is sound. For modern medical psychology now admits that there is in every man a reserve fund of energy — a fund not commonly utilized — but which, under great necessity, or through the impulse of some overpowering dynamic idea, may be drawn upon for the benefit of the physical, mental, and moral organism.

A whole-hearted faith in God's healing and a redeeming grace thus becomes the means of tapping this subconscious reservoir of power, and may be the basis of the success of Dr. McComb and others who are faithfully and painstakingly working along these lines.

Similar results follow psychological treatment at the hands of men like Dr. John D. Quackenbos, of New York, Dr. Boris Sidis and Dr. I. H. Coriat of Boston, of Aschaffenburg, Kraepelin, and others. For powerful suggestion, persistently repeated, frequently induces a curative spiritual nausea — a revulsion of soul against even the very odor of alcohol.

An important matter in any cure for alcoholism is properly regulated diet. Great care must be taken to give all the most easily digested and

nourishing food the patient can utilize — and no more.

The general health will also be benefited by judicious exercise, plenty of fresh air, day and night, tepid or cold baths — or hot baths at bedtime — and proper mental occupation and divertisement. Remember that the more vigorous the physical condition, the less chance for relapse.

The lasting effects of any treatment are naturally influenced by the environment to which a patient must return. So if the environment is not good, and it is possible to leave it behind, by all means do so.

Excepting the elderly, or in those with weakened hearts, physical exercise is the very best after-treatment. The responsibilities of one's occupation (unless one happens to be engaged in the brewery or liquor business, in which case he had better seek a less dangerous job) should be resumed as soon as returning strength will permit. This shouldering of responsibility is infinitely better than idleness and the distrust of one's powers which idleness engenders, and serves also to act as a hopeful and powerful suggestion.

So alcohol addiction is curable. It requires merely that the addict desire with his whole soul

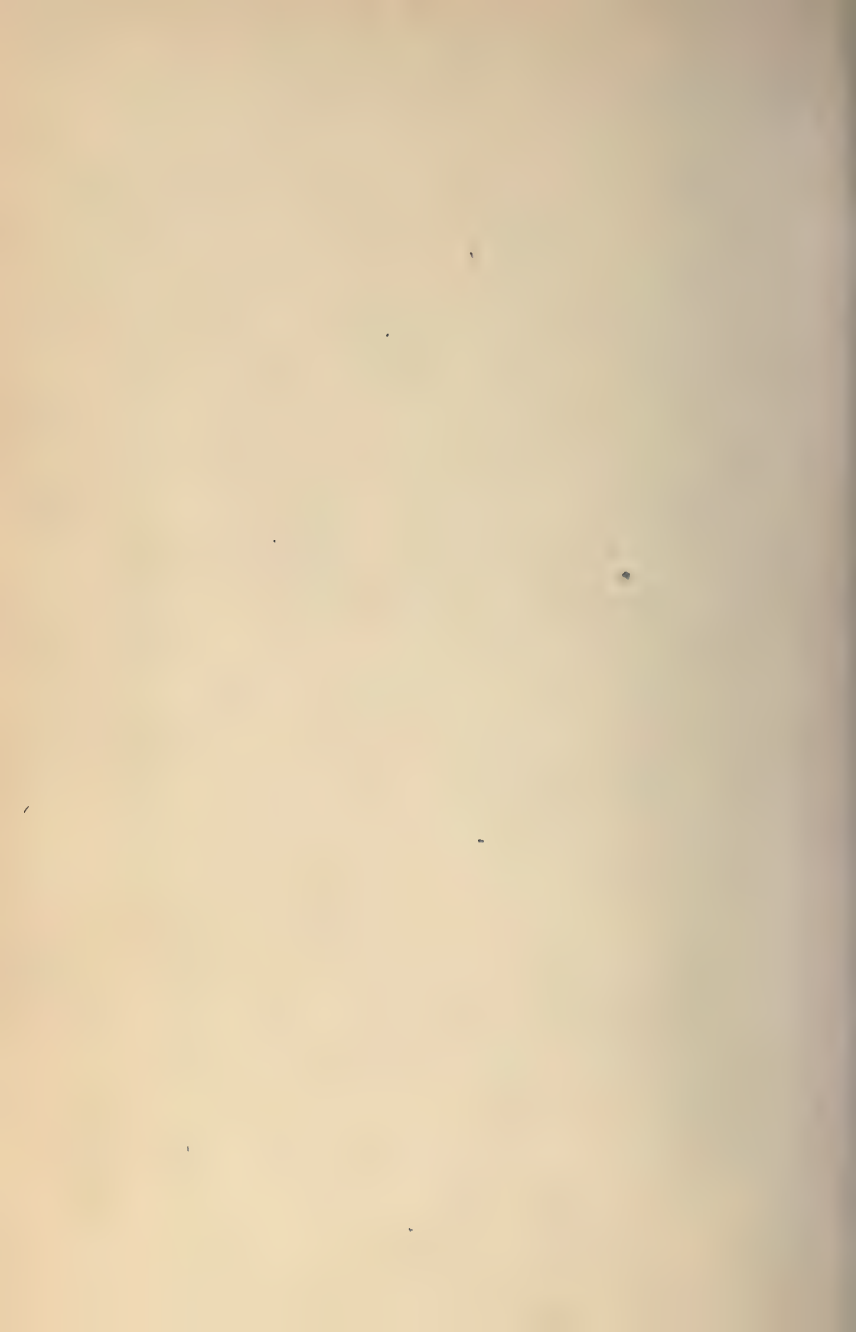
to be cured; that a method suited to his individual requirements be selected; and that patient, doctor, and family all work together — in absolute confidence that a perfect, permanent result will follow sincere and intelligent effort.

Yet our chiefest concern should be to prevent rather than cure drunkenness. We have been densely ignorant of the psychological and physical effects of alcohol. We have hitherto known it only in its gross, palpable effects. Now, however, we know it in its less obvious, but not less disastrous consequences.

Simply because we feel strong and healthy, because alcoholic drinks are pleasant and afford a savor to our social life which makes their use seemingly indispensable, and because we have seen no immediate ill effects from this use, we have refused to believe alcohol dangerous.

Now, however, we know better. What use we are to make of this knowledge may be the most important decision of our lives. I can truthfully say that I, personally, have weighed alcohol in the balance, and found it wanting. Calmly and dispassionately, without the slightest desire to proselyte or unduly influence, I pass the results of these studies on to you.

I *know* that alcohol produces deficiency — in industry, in health and length of life, in physical, mental, and moral well-being. I sincerely hope that you will give the subject careful consideration, and shape your future course in accordance with deliberation and judgment.



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